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A Magazine of Horticulture, Botany
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THOMAS MEEHAN,

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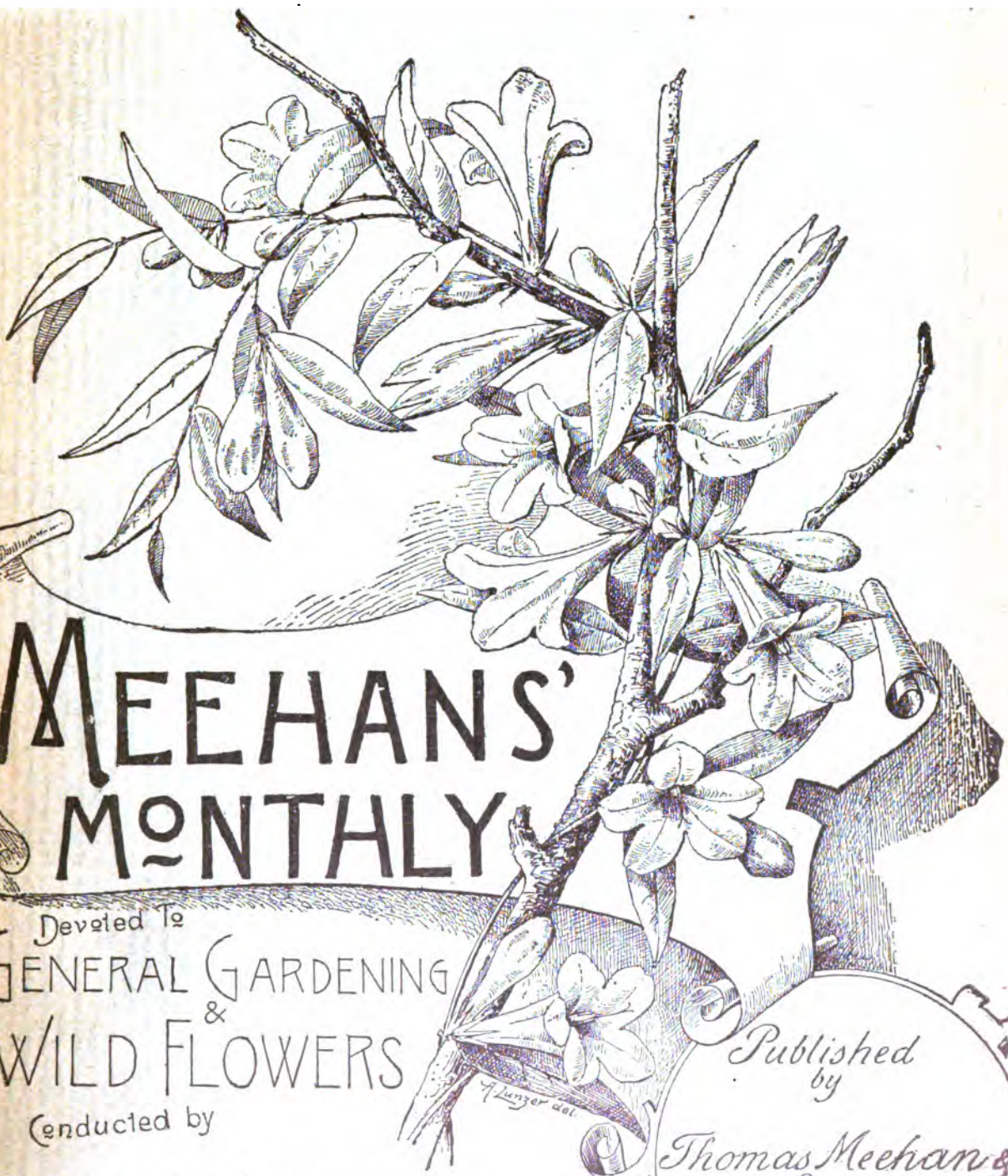

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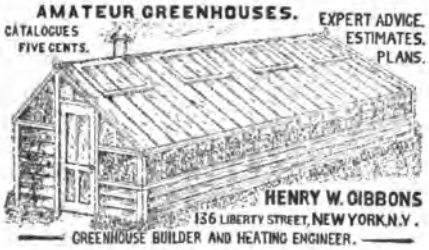

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ERIGERON SPECIOSUS.

SHOWY ERIGERON.

NATURAL ORDER, COMPOSITÆ.

ERIGERON SPECIOSUS. De Candolle.—Sparingly and loosely hirsute or with a few scattering hairs; stems mostly two feet high, very leafy to the top; leaves lanceolate, acute (three to eight lines wide), sparsely ciliate; lowest more or less spatulate; involucre hirsute-pubescent, or sometimes almost glabrous; rays half-inch to almost an inch long, violet. Gray's *Synoptical Flora of North America*. See also Brewer and Watson's *Geological Survey of California*.

Those familiar with the Flora of the Eastern United States, are well acquainted with the genus *Erigeron*, two of the species of which, *Erigeron strigosus* and *Erigeron Canadensis*, are so abundant in fields devoted to hay crops as to form the bulk of the material, in many cases, and present a perfect sea of white when in bloom. The former is known to farmers in Pennsylvania and other States as Daisy, and occasionally Fleabane, — and the latter as Horse-weed and Butterweed, the name Butterweed being probably derived from the disk, the color of which is more conspicuous than in the daisy. Though this will give some general idea of the genus, it gives a poor idea of the beauty of many members of the family. The species here illustrated, *Erigeron speciosus*, is perhaps the handsomest of the genus. In the early days of July, 1883, during a botanical excursion in the vicinity of Port Townsend, in the then Washington Territory, it seemed to the author the most impressively beautiful of all the wild flowers of that region. It had possession of large areas in open, grassy places; and the rich violet flowers, tempered by the pale yellow disk, were almost dazzling in effect. In this situation, massed together, they were not as rigid and stiff as one might infer from the drawing, but had more of a go-alone character, much as we may see in a red clover plant.

In Washington and Oregon, however, it is very commonly met with; but varying greatly in its general character in different localities. Nuttall collected it on the shores of the Columbia River; but his specimens have the leaves so long and narrow that they might almost be termed grass-like; while specimens from the line of the Clearwater River, gathered by the Rev. Mr. Spalding, are short and broad, like the figure in the "Botanical Register," the plant from Douglas' seed. The form herewith figured is intermediate between these two extremes. The picture was taken from specimens kindly supplied by Mr. Jackson Dawson, of the Arnold Aboretum; but the exact locality of the original is not known except that it was somewhere from Washington Territory.

A well established common name is often of value to those who study the history of plants. In this case, a number of species are known as fleabane, though, so far as known, they are not the bane of fleas or of other insects. This is the common name of species of *Conyza*, common in the Old World, and which are very useful as indicated by the name in question. In looking up the history of *Erigeron*, it will be found to have been originally classed with *Conyza*. So recently as the time of Ray, a European species, *Erigeron glutinosus*, was known as *Conyza montana*,—and our own *Erigeron Canadensis* is treated of, in the ante-binomial times, as *Conyza annua acris elatior linearæfoliis*. This species, therefore, would be the original fleabane among North American ones, should the rule of priority be extended to common names as they are to those botanical. Even the name *Erigeron*, itself, has an interest for philologists. It is the Greek representative of *Senecio*. This *senex* means an old man, and was applied by the ancients to the Groundsell, *Senecio vulgaris*, and suggested by the grey-haired heads of that plant when in fruit. The Greek *geron* stands for *senex*; and *er* the spring, is suggested by the spring flowering of the Groundsell,—literally, the old man in

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spring. Since this was pointed out by Dr. Asa Gray, the old form of the name, in the neuter gender, has been changed to the masculine. Our plant, formerly *Erigeron speciosum*, is now written *Erigeron speciosus*.

In the genus *Erigeron*, there are over one hundred good species. A large number are American. Dr. Asa Gray, in the work from which our description is taken, adopts sixty as the number for North America. In all large genera, botanists endeavor to find some strong, dividing lines to establish other genera, and attempts have been made to do this service in *Erigeron*. The plants we now have here at various times found themselves in some couple of dozen genera. Our plant was in the genus *Stenactis* established by C. G. Nees. In the original *Erigeron*, there is some difference between the pappus of the ray and those of the disk florets, and *Stenactis* was founded mainly on this difference. But it is found this line is too indefinite to be accepted. It is, however, to be found under the title of *Stenactis* in the botanical works of the earlier part of the present century. In Garden literature, our plant usually appears as *Stenactis speciosus*. Nuttall supposed his grassy-leaved plant, found near the Falls of the Columbia River, might be a new species, and left his specimen without a name; but Dr. Gray has written on Nuttall's label "only a narrow-leaved form of *Stenactis speciosus*." The leaves are three inches long, and not more than half an inch wide at the clasping base.

What is true of dividing the species is true of the genus itself. It is extremely difficult to say how the genus should be defined as distinct from its neighbors. It is one of those cases where nature presents us with a genus without the assistance of the expert botanist. A plant is decided to be an *Erigeron* by what the French call a *coup d'œil*. It can be seen to be an *Erigeron*, without knowing well the reason why. No one familiar with *Aster* would take an *Erigeron* to be of that genus. There is something distinctive in the general appearance,—especially in the very large number of ray florets, which are also very narrow and in several rows. The involucral scales, of the common receptacle, are also numerous and narrow, and they are more uniform in size and character than in *Aster*, where they are in varying degrees of size and form in the same flower-head. In botanical descriptions, attention is usually but little given to the characters of the florets. This is owing, in a great measure, to the necessity of describing from dried specimens. The student should take any occasion to examine fresh flowers with an ordinary pocket lens. Good distinguishing characters will often be found in the akenes, pappus, and the florets themselves.

In arranging a large family like *Erigeron* for classification, it is the part of genius to so arrange the species that continuous repetitions of terms can be avoided. In the character adopted, in this chapter, from Gray's *Synoptical flora*, one could not well decide that our plant was *Erigeron speciosus*, from the brief description given. The leading points are given in sections, sub-sections, and divisions. We have to go back to a sub-division, in which the collection, as described by Dr. Gray, would be "less Aster-like; lower rays more and narrow; involucre closer; pappus more or less double, but the exterior minute, setulose, or subulate-squamellate; stems chiefly erect, tufted, generally leafy to the summit, and bearing few or several heads, leaves entire." But still further back we find this has to be included in another sub-division of ones "comparatively tall and large, a foot or more high except in alpine or depauperate forms, leafy-stemmed, glabrous to soft-hirsute; leaves rather ample, entire or occasionally few-toothed; heads pretty large, with usually very numerous rays; montane or alpestrine." Still further, however, we must go back to another division in which the plants are "true perennials from root stocks or a caudex, neither stoloniferous-surculose nor flagelliferous; involucre from hispid or villous to glabrous, but not lanate, in the first species loose and spreading; all western or northern species." And all these again under one grand sub-division, named specifically *Euerigeron*, in which the rays are elongated and conspicuous, or in a few species uniformly wanting, in one or two occasionally wanting; no rayless female flowers between the proper ray or disk." It is by these careful sub-divisions that the student is enabled to work out his collections with nearly as much ease as in small genera.

EXPLANATION OF THE PLATE.—1. A nearly full-length specimen from Washington Territory. 2. A vertical section of a receptacle, with a single floret,—magnified.

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WILD FLOWERS AND NATURE.

A SUMMER OUTING.

Pleasant it was, when woods were green,
And winds were soft and low,
To lie amid some sylvan scene,
Where, the long drooping boughs between,
Shadows dark and sunlight sheen
Alternate come and go;

Or where the denser grove receives
No sunlight from above,
But the dark foliage interweaves
In one unbroken roof of leaves,
Underneath whose sloping eaves
The shadows hardly move.

LONGFELLOW.

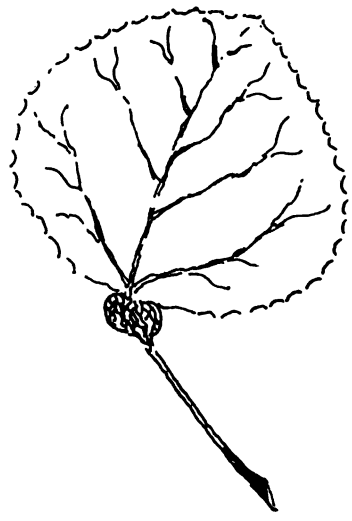
DOUBLE ORANGES.—With this mail I send you what to me is a curiosity. It may not be to you. To me it seems to be a little orange which was taken out of another orange, from the blow end, both apexes being one. If this is worthy of notice in your journal, I should be glad of the explanation. I wanted to cut it open, but, I thought if it might be new to you that you would like to see it whole.

Moscow, Vermont. TIMOTHY WHEELER.

The specimen sent was a little larger than a child's marble. It represents a class known as "navel oranges." There are a number of varieties, some with the secondary orange larger than this, some with smaller. As in other fruits, selections are made by the fruit improver, and these selections continued by grafting.

These wanderings from what may be termed the normal type, are not uncommon in the vegetable world. One, the most frequently seen, is one rose growing out of the centre of another. The explanation is, that a flower or fruit is but a branch that has been arrested in its growth; and that the petals of the flower and carpels of the fruit are what might have been leaves. In such cases as this of the orange, the arrestation of the branch has not been complete. It starts on again in a weak attempt to make another set of leaves,—or, as they really become, another depauperate flower and fruit.

POPLAR GALLS.—Mr. W. C. Egan, Highland Park, Illinois, says:—"While ruminating in the woods, to-day, I came across quite a thicket of seedling poplars, from five to seven feet high. A great number had a large percentage of their leaf stems encircled, at the base of the leaf, by worm-galls. At first, on account of the regularity of position, I imagined a new method of seed ball attachment, but upon cutting the ball open I found a small green worm. The singular feature to me is that I could not find any balls except at the base of the leaf."



POPLAR GALLS.

Few things in natural history afford more pleasure to the student of nature, than the wonderful judgment displayed by insects in their life economy. At one time, when man was thought to be exceptional in the animal kingdom in being gifted with judgment, the lower orders merely following blind instinct, little was thought of the remarkable adaptations to conditions everywhere seen about us. It is different, now, when knowledge has progressed. In the present instance, the judgment displayed by the little fly in depositing its eggs is remarkable. At the base of the leaf-blade, in the poplars, are glands excret-

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ing a honeyed-secretion, very grateful to ants and other creatures having "a sweet tooth." This would also furnish excellent food for the larvæ of the insect. The fly has found this out, and, with unerring judgment, the egg is deposited in the gland, and the gall—the homestead of the "worm"—is furnished with pantry and dining-room, as well as a parlor for the young in which to enjoy themselves.

ERIGERON SPECIOSUS AT HOME.—Possibly the inspiring effect, noted in the main chapter, was aided by the view being from a knoll that afforded the opportunity of looking down on the masses of flowers below. It has long been cultivated in English gardens, where it is esteemed as a leading ornament, having been sent over, by the unfortunate Douglas, from California to the Royal Horticultural Society of London. It is on this account that it is accredited to California by Watson, though he remarks that it has not been found so far south as the line of that State since Douglas' time.

MEDICINAL VALUE OF THE HONEYSUCKLE AND MORNING GLORY.—Along one of the side streets of Philadelphia, near the Reading Terminal, the passer-by may be attracted to a modest and well-worn show-case filled with samples of various wares of an "Herb Doctor" that are calculated to cure about all the ills to which the human body may be subject. Judging by the labels attached to the various mixtures and by the cards soliciting their use, the "Doctor's" illiteracy is about as strong as his medicine, and will be certain to cure anyone too ill to laugh. One of his most prominent prescriptions is Honeysuckle and Morning-glory, which is held as a sure cure for asthma and colds generally.

DIATOMS.—These plants have a peculiar method of vegetative multiplication which is unlike anything found elsewhere among the algæ. The two halves of the "box," which are called valves, begin to separate slightly from each other, and as the contents divide into two parts, there is formed within two new halves, one fitting into the larger half of the original cell, and the other forming a new box with the smaller half of the parent plant. These then separate, and thus there are formed two diatoms of exactly the same construction as the mother cell, although one is a trifle smaller than the other. In addition to this method of propagating the species, there are various ways by which the plant forms a single large resting spore and recently it has been discovered (chiefly through the work of Castracane and Murray) that it is probable that the whole contents of a diatom cell may break up into a number of small spores, each one of which develops into a new plant.—*American Journal of Pharmacy.*

PLANT PHOTOGRAPHY.—The ranks of amateur photographers have, within the past few years, assumed wonderful proportions, and nearly all the details of production, heretofore known only to the professional, are being mastered as well by the amateur.

The small cameras, or "kodaks," as they are all generally termed, have made possible the creation of great interest in this art, and subjects of many kinds are brought into use. But one subject has been very greatly neglected,—possibly because more difficulties are encountered and that the knowledge of the subjects as individuals is limited. The reference is to the photography of plants.

Some amateurs delight to make a special study of portraiture,—others of architectural works, marine or landscape effects; many are entirely aimless in their efforts, other than to amass a collection of reproductions of familiar scenes. But very few, indeed, make plant life a chief study, which is to be regretted.

The movements of foliage and flowers in the wind, and the lack of contrast between them and the surrounding vegetation are the greatest difficulties to be surmounted. But it is just here that an interesting study may be developed.

Taking for example the wild flowers or trees as they may be seen in their natural haunts, good photographs will always be found interesting as well as instructive, and will awaken pleasant memories of some delightful summer stroll.

MEEHANS' MONTHLY desires to encourage this phase of amateur photography, and will gladly reprint interesting notes on the subject, as space will permit, from the experiences of its readers; and photographs, themselves, can be frequently reproduced with interest to the readers in general.

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GENERAL GARDENING.

THE ROSE LEAVES OF MEMORY.

No, the roses soon wither'd that hung o'er the wave,
But some blossoms were gather'd while freshly they shone,
And a dew was distill'd from their flowers that gave
All the fragrance of summer, when summer was gone.

Thus memory draws from delight, 'ere it dies,
An essence that breathes of it many a year;
Thus bright to my soul, as 'twas then to my eyes,
Is that bower on the banks of the calm Bendemeer! MOORE.

SCHOOL GARDENS.—Believing that the mere memorizing and reciting of text-book lessons was not the best way to a proper development of the young the writer, more than a quarter century ago, advocated and aided in testing a system of instruction in which one half-day was given to literary exercises in lectures and conversations with objects, pictorial and chart illustrations, and one half-day to manual work in printing and binding, wood engraving, drawing and coloring charts, scroll sawing and turning. The system was called pantographic and the school the Philotechnic Institute. The boys and girls are now grown, and are giving strong testimony of the excellent system by their better work and greater success in the different occupations. By hand work while the muscles are young and more flexible, they acquire a degree of skill which they could not acquire in later years, and, as all organs grow strong to the work they are used for, the pupils can do more and better work than those educated by the common system.

As he did not succeed in persuading the directors of rural schools to adopt his system, he has rented a plat of ground near the Greenville School, and pays the pupils five or seven cents per hour, for time when they are not engaged in the school room, to help work in the garden. The price is not fixed by size or age, but by the qua ity of the work done. They are paid in stock which represents ground rent, manure, labor and the cost of the crops. The stock is guaranteed at one dollar per share and a dividend if there is any profit to divide. This gives them a direct interest in the work and makes the school garden a part of the greatest educational institution—the business world.—At the commencement we found pupils who could solve problems in fractions and the square root, but did not know how to get right angles for a poultry house, or the degrees of obliquity of the sun's rays so as to get the best angle on the south sides of ridges and secure the most value from the rays for early crops. They did not understand how to lay the lines for scientific plowing to turn the good ground towards the centre and leave the "dead" furrows next the fence for the weeds to grow in. With our work we propose to study the elementary principles of farming and natural sciences.

As showing the value of some knowledge of botany, an English farmer had to pay a drover for renting pasture with Digitalis in. He plead ignorance of the poison character of the weeds, but the court did not excuse him. Educated gardeners receive more than twice the wages of common farm laborers. When our State Agricultural Experiments were started, the board held a meeting in Camden, with a view of having a branch station there, and asked the writer to aid them in finding a person acquainted with plants and insects to place in charge; but we could find no one suitable, and the effort was abandoned. Dr. Cook, the director, said when in Norway and Sweden, if he found a strange plant or insect he could get its name from any laborer in the field, and it was the one thing which made him ashamed of his own country.

During the Centennial Exhibition, one of the English Commissioners, who made educational systems a study, said he was at first favorable to our public school system for its reduction or

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illiteracy; but when he looked in our great industrial works he found the graduates employed on book-keeping, and the higher places filled by foreigners. The greatest objection made to manual training is that it takes from the time of literary studies; but from my observation I believe one hour with the pupils at work or play, when they use their own language, is worth more for the improvement than the whole day with memorizing and reciting the language of the text books on English grammar, or the bad pronunciation of the names of continental Europe, Asia and Africa, in the geographies.

In France, gardening is practically taught in twenty-eight thousand primary and elementary schools, each of which has a garden attached to it. In Sweden, in 1871, twenty-two thousand children received instruction in horticulture, and each of two thousand and sixteen schools had for cultivation from one to twelve acres. In Russia, many children are taught tree, vine, grain, garden, silk worm and bee culture.

In ancient Greece, a law required the son to support the aged father; but if the father had neglected to teach the son an occupation, the son was exempt from the obligation. Every primary, as well as all higher institutions of learning, should have a garden.

Camden, N. J RODOLFUS BINGAM.

ROSE, CRIMSON RAMBLER.—A photograph of a comparatively young specimen of the Crimson Rambler rose, growing by the porch of the residence of Mr. John G. Bullock, of Germantown, Philadelphia, leads to the remark that we may always look for the greatest line of improvement by the introduction of wholly new species from their native wilds. When once improved, nature holds the lines more tightly, and but little more improvement can be made on that which has been already improved. Here we have a grand improvement on the wild *Rosa multiflora*, of Japan, which has been known to botanists ever since the time of the great botanist Thunberg,—but as *Rosa polyantha*, it has but recently been introduced into gardens. The numerous white flowers of the latter, and subsequent crimson fruit, is attractive. But when the colored plate of the improvement, in the form of "Crimson Rambler," was first widely distributed by Ellwanger & Barry, it was only the high standing for accuracy which this great firm enjoys that secured full credit for it. It has the beautiful red flowers in large clusters, as their picture represented,—and that it is a good rambler or climbing rose, is evidenced by the three-year old plant given in our illustration. It is proving one of the most popular of the new introductions of late years.

CRIMSON RAMBLER ROSE

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BEECH TREE BORERS.—During recent seasons correspondents have called attention to the different dates of leafage on the branches of the same beech tree. It is a curious sight to note perhaps half the branches in full leaf, the others remaining dormant for many days afterwards. This season, the writer discovered that this was owing to the existence of a borer in the tardy branches. The branches, in many cases, are as hollow as a bamboo. It is well known, to experienced gardeners, that the most highly vitalized branches are the earliest to leaf. In all trees, some individuals leaf earlier by several days than others. Under equally unfavorable conditions, as, for instance, transplanting, the earlier leaved are the last to succumb.

These beech borers are of considerable size, and do not seem to be in great numbers on any one tree,—and yet the tree will die in time from their attacks. It ought not to be difficult to destroy them by thrusting a wire into their holes.

It does seem that not only to the weeds are we under obligations to get our living by the sweat of our brows. Insects and minute funguses may claim a portion of battle in their interest. It will soon be found as essential to good gardening to keep a force of men at insect-killing and fungus-destroying, as in a force to hoe weeds.

THE CHINA TREE.—In speaking of the Camphor tree as a street tree in New Orleans, it reminds me of a street tree I saw in Vicksburg, while we were "holding the fort," called the "China tree." It was beautiful while in bloom, but round-headed, and not very graceful as a street tree. I never saw it growing elsewhere. Does the Editor of the MONTHLY know anything about its history, etc.?

Oberlin, Ohio. G. N. CARRUTHERS.

The so-called "China tree" is indigenous to the Himalayan Mountains, and extends in Asia to Cochin-China. It is, botanically, *Melia Azedarach*, the genus being the type of the order *Meliaceæ*, of which we have no representative. It is often cultivated in the Southern States, and has become wild in many instances. As our correspondent suggests, it is a coarse, ungainly tree, when leafless; but its sweet lilac-colored flowers are a fair compensation. It must have been exceptionally cold in New Orleans to kill the Camphor tree,—or there may have been depressing conditions in connection with the frost, as it is surely capable of enduring 10° or 12° of cold without injury.

FRUIT OF THE OLEANDER.—In my note on the fruit of the Oleander, page 68, I said that the weight of fifty seeds was 22 *grams*—not grains, as you have it. Please make the correction. I may further add that some of the seeds were planted and the percentage of germinations was good. E. E. BOGUE.

Stillwater, Okla.

EULALIA GRASS FOR INDOOR DECORATIONS.—If promptly placed in water after being cut, the leaves and plumes of the *Eulalia Japonica* make a fine decorative effect. Take an entire clump or equal bulk of single stems, which place in a good, large umbrella stand filled with water. In the case of the plumes, to keep them from "falling," they must be cut before they are thoroughly ripened, when they will last for years in a vase without water. For some reason—possibly because their height usually makes them more exposed to the winds—*Eulalia Japonica* (plain, green-leaved) and *E. var. zebrina* fall very quickly, and must be cut earlier than the others.

DWARFING TREES.—Inquiries are often made as to how the Japanese dwarf trees. One of these people tells the *Gardeners' Chronicle* that they simply pinch out the new growth as fast as it appears, by the use of finger and thumb only. They re-pot once in two or three years, cutting out all the weak roots, but carefully saving the strong ones, carefully well-draining before returning the plant to the same pot. They manure with oil-cake, bone meal, or some such concentrated material, twice a month, except in the two hottest months of the year.

WEEDS AND ORNAMENTAL PLANTS.—That what may be a valued ornamental plant in one part, may be regarded as a pernicious weed in another, is well exemplified in our pretty garden Lantana, *Lantana Camara*. Few ornamental plants are more highly prized in northern gardens. But in his recent "Flora of the Sandwich Islands," Mr. A. A. Heller has this to say of it: "This species has become the

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most noxious plant in the Islands. Introduced in 1858, it is now abundant, and has ruined hundreds of acres of valuable pasture land. It forms impenetrable thickets on the slopes and in gulches of the lowlands, and has even invaded the lower forests. Here it grows in thick clumps, the stems often becoming weak and vine-like, and intertwining in a very intricate manner. The flowers vary in color, some being almost white, others purplish, and some are orange." In our own country it has already invaded Florida; but as it is not frost-proof, it will have to draw a line there to its desire for acquiring additional territory.

to the mountains of Georgia. It is particularly useful for planting in partly-shaded places.

HARDY FUCHSIAS.—The following letter, received by the Senior Conductor, will doubtless prove interesting to our readers:—

"I read an interesting account in reference to you, in a recent issue of the Philadelphia *Record*, to which, no doubt, your friends have drawn your attention. If they have not, it is to the effect that a person (a lady, I believe) at a meeting of the Psychological Circle, stated that she liked you, although she has not had

PAVIA MACROSTACHYA.

PAVIA MACROSTACHYA.—Under the common name of Dwarf Horse Chestnut, the beautiful shrub, here illustrated, has long been known in leading nurseries. It belongs, however, to the genus *Pavia*, the buckeye section, rather than to the *Æsculus* or Horse Chestnut class. The latter has broad, spreading petals and prickly fruit; while the buckeyes have irregular, stalked, erect petals, and smooth fruit. The large spikes of pinkish-white flowers, densely set on the rachis, in contrast with the somewhat drooping leaves, always attract admiration. It is a magnificent shrub, blooming in June, and thoroughly hardy, though native

the pleasure of seeing you. She claims a bond of sympathy between you and herself, on account of similar experiences you both have had, which is to the effect that you 'had certain pet flowers, and your pet flowers always died in spite of every care and attention.' It would be interesting to know what are your pet flowers that always die. If such is really a fact, which I am inclined to doubt, the same reasons for death in your pets are not the same as are those of this member of the Psychological Circle.

"A personal experience of my own, I think, will interest you. I was always fond of the

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Fuchsia, and, twenty-five years or so ago, I took great interest in them, as they responded gratefully to generous and intelligent treatment, more so, I at that time thought, than any other plant. Two years ago I took a notion to renew my acquaintance with them, and secured a few varieties. After the experiment was over, and not having room in the greenhouses for them, and not caring to throw them away, I planted them outdoors last September, along the northeast side of my residence. Forest leaves were plentifully used as a mulch, and now, although the tops of the plants are dead, quite a number of them are throwing healthy and hearty shoots from the base. Mr. Wm. K. Harris related to me that he had made a similar experiment with the same results. It is not generally known, I think, that Fuchsias may, with a little care in the fall, be made to live all winter. This may or may not be of some practical value, but in any case, I knew you would be interested, and that is my reason for writing to you on the subject."

Wyndmoor, Mont. Co., Pa. EDWIN LONSDALE.

The lady's psychology has evidently gone astray. The T. M. who wrote in Lalla Rhook—

"'Twas ever thus from childhood's hour
I've seen my fondest hopes decay,--
I never loved a tree or flower
But 'twas the first to fade away"—

is evidently her "affinity,"—and not the T. M. of the present time. His flowers rarely fade away when he cares to preserve them.

The experience with the Fuchsia is valuable. In the case of many things it is not so much the bursting of the tissues by expansion through frost, as it is the drying out of the sap by cold wind and bright light. If evaporation is guarded against, no injury results. Hence, figs, raspberries, roses, crape myrtles, and other plants, are bent to the ground and buried under the earth in the fall, the thermometer above them may fall far below zero without injury. It is possible to have a Fuchsia live out many seasons, and get many feet high, by being bent over and covered by earth.

THINNING ORNAMENTAL TREES.—One of the difficulties landscape gardeners experience in laying out grounds for their patrons is in the planting arrangements. They have in mind the picture of the future when the trees and shrubs have grown. But the owner desires to enjoy the living present, and the grand results in the artist's brain have to be, in a measure, realized in some respects at once, or there is not full satisfaction. To effect this, trees and shrubs have to be planted thickly,—the artist explaining that the common things must be cut away from time to time as the trees grow. But this thinning rarely occurs. In a few years there is a mass of vegetation, pretty as a mass, but with the natural beauty of the individual tree wholly lost.

In our public parks and pleasure grounds, particularly, is the want of judicious thinning painfully evident, as a rule. The great public has been taught that to cut away a tree is a mortal sin never to be forgiven, and there are few managers courageous enough to brave this exaggerated condition of public opinion. It is the same with our street and boulevard trees. They have to be set closely to meet the demand for speedy shade. They soon meet, and unable to spread horizontally, struggle upwardly, until the "tree-butcher" becomes a public blessing in beheading them with hatchet and saw.

In almost all newly-planted places, an intelligent landscape gardener should be called in to advise with after a period of about ten years,—and a second inspection should be arranged for after another similar period. The "joy for ever" that we read so much about would be an actuality whenever the beautiful trees and shrubs were looked upon.

THE RED SPIDER.—One of the greatest scourges in American gardens is the Red Spider. It is especially injurious to coniferous evergreens, especially arbor-vitæs and spruces. The insect is so small that it is not noticed till the injury has far advanced. It can, however, be early detected by a change in the green tints to a more livid hue on some of the leaves. The iusect is, however, easily destroyed by kerosene emulsions, by the use of a sprayer, an implement that is now as essential in gardening as a spade or a rake.

COLORED LEAVES FOR FALL.—"We desire something for a mass of particularly brilliant fall foliage for a prominent place in a public garden. Either a strong-growing herbaceous plant or shrub would do. What would you advise?" Try a mass of poke-berry—*Phytolacca decandra*.

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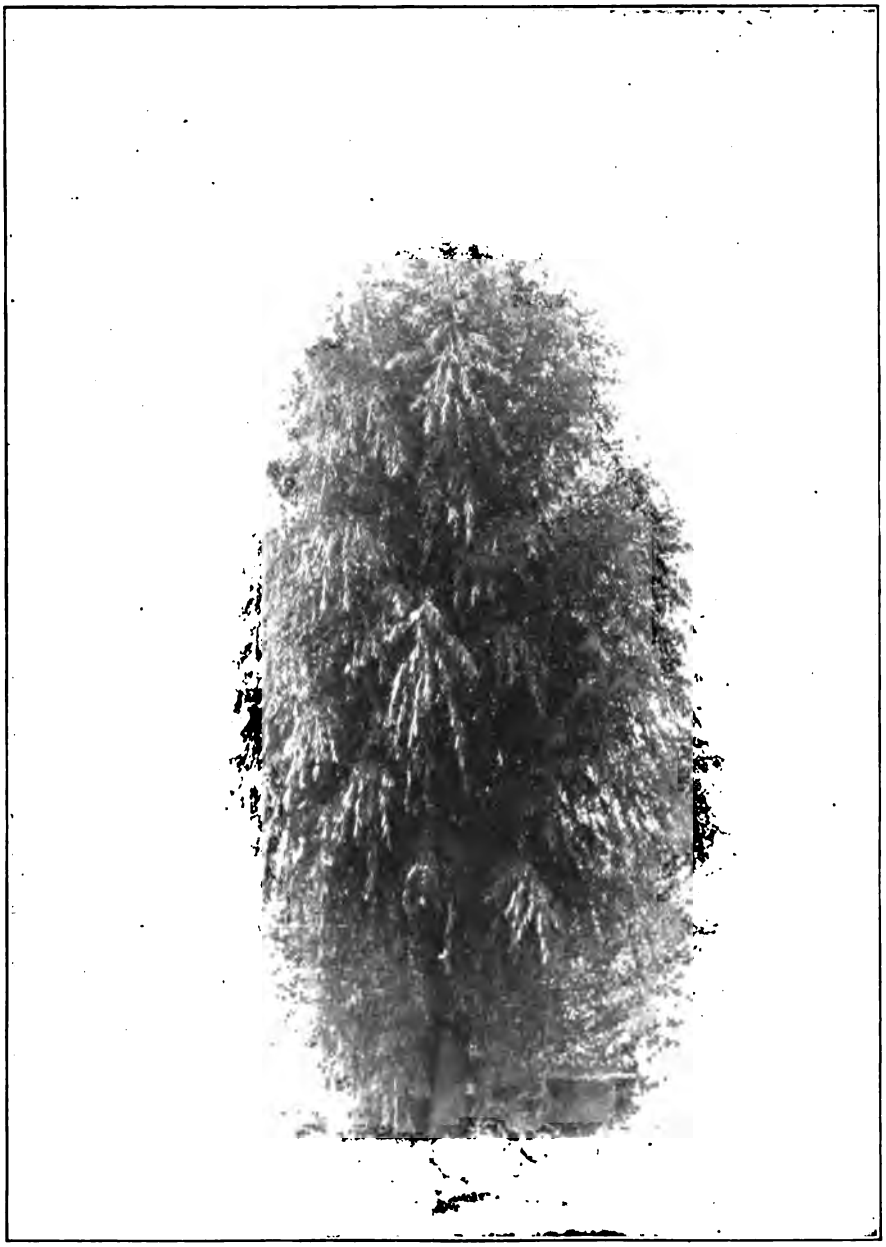
NEW OR RARE PLANTS.

THE BABYLONIAN WILLOW, — THURLOW'S WEEPING.—As now is generally known, the so-called willow of Babylon is a Chinese plant, and, like most Chinese plants, is not hardy under very severe conditions. In Massachusetts and other localities in the North, it does not endure the winter climate. All kinds of plants are liable to sport,—not only in the color of the flowers, and character of the leaves, but in habit and hardiness. Mr. T. C. Thurlow, of West Newbury, Mass., was fortunate enough to find a sport among his stock of Babylonian willows, with a more erect habit than usual, and which proved of extra hardi-



BABYLONIAN WILLOW--THURLOW'S WEEPING.

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ness. A photograph of the original tree is here reproduced. It was taken in 1895, and is said to be a model of beauty now. In the report of the Nebraska State Horticultural Society for 1893, is the following account reported by one who had cuttings a few years before for the Experiment Station at Franklin, Neb. :—

"While visiting my friend T. C. Thurlow, of West Newbury, Mass., I was much impressed with a graceful and beautiful weeping willow, and I asked him what it was . . . It was one of the most stately and beautiful weepers that I ever saw. The question arose whether it would be hardy at the West. I secured some cuttings. The first winter they killed back a little, as most young trees will. They went through the next winter without the loss of a bud. One feature surprised me, and that was the rapidity of growth.

"I have some eight or ten varieties of Poplar—supposed to be the thriftiest of trees, but this willow beat them all. I have had them make six and seven feet the first year. There is one striking peculiarity about them; the bodies and twigs are of the deepest and richest green in winter, making a cheerful contrast with the dull gray of other trees. The general habit of the tree is something like the Cut-leaved Weeping Birch, though of a more thrifty growth, and of a more decided drooping habit. Some noted horticulturists visited the tree, but could not name it, and so we deemed that it must be a sport and we called it the Thurlow Weeper."

SYRINGA OBLATA.—This new lilac, *Syringa oblata*, is a native of China, but has but recently been introduced into American nurseries. Its blossoms, and indeed its whole appearance, including its fragrance, remind one of the common Siberian lilac of our old gardens. It is earlier in flower. Near Philadelphia, the children always look forward to lilacs for May-day. They were disappointed this year. At this writing, May 4th, they are not open. *Syringa oblata*, or Chinese lilac, has been open for a week.

THE HARDY FLOWER GARDEN.

NATURAL BOUQUETS.—There are some hardy flowers produced in large panicles, making in themselves a well-formed bouquet, one of the finest of which is the *Helenium*. The huge bunch of flowers produced on a single stem will occupy most ordinary size vases and make a handsome display. These stems may vary from 4 to 6 feet in length, and are very stiff, capable of bearing the head of flowers perfectly. Their use for decorations is apparent. The flowers are long-lasting. *Aster Tataricus* also makes very large panicles on stout stems; *Aster Novæ-Angliæ* is likewise useful, and the color perhaps better for that purpose. Some varieties of the tall perennial *Phlox* produce pretty large panicles. Among trees and shrubs there are few with extremely large panicles suitable for decorations. The Japanese Hydrangea is perhaps the best of all, and to secure large heads there must be strong, vigorous growth, encouraged by close pruning in the winter.

SPOTTED ARCHANGEL.—In the old-fashioned gardens one of the most welcome of spring flowers was the *Lamium maculatum*, or the Spotted Archangel, as the old folks termed it. The leaves have a white spot down the centre of the leaf, which gives it both the scientific name maculate and the common. It remains continuously in bloom from the first awakening of the flowers till past midsummer, though the later flowers on the spike are not so attractive as the earlier ones. It grows well in the herbaceous border, either in sun or shade, though rather preferring the latter in our country.

DESMODIUM PENDULIFLORUM.—There seems to be some difference of opinion as to whether or not this plant and *Lespedeza bicolor* are one and the same, and for the benefit of many of your readers, I will give my experience in regard to them. Three years ago, a plant of *Lespedeza bicolor* was purchased, and on its blooming we found that one of our old friends of the garden had appeared under a new name as *Desmodium penduliflorum*. The plant in our collection was exactly similar in the minutest detail. The plant has been on this place for fifteen years, at least. I do not see the white variety offered, although we have both, and think the white very beautiful. It increases very rapidly, indeed, and is a very nice companion to the purple variety. It is hardy without any protection here, and, I have

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no doubt, further north than this, provided it be given a light, well-drained soil. Planted in an open space and supported by rings of wire, it makes an elegant subject. It is cut to the ground every year by frost, as most perennials are, and is a little late starting to grow. To-day (May 24th) it is two feet high, and has twenty growths, which mean a thing of beauty in the early fall. All who possess the purple variety should, if possible, procure the white. The white, especially, is beautiful for cut-flowers. This proof of ours, by trial of both plants, ought to establish the fact that *Lespedeza bicolor* and *Desmodium penduliflorum* are one and the same plant.

I have since noticed, in Henderson's Handbook, that, when introduced from Japan, it was first distributed as *Desmodium penduliflorum*.

Rahway, N. J. A. P.

This was a case of mistaken identity,—and is not to be classed with the changes of name, now so common, in order to do honor to some obscure botanist. The plant is a true *Lespedeza*, and not a *Desmodium*, as the German botanists thought, who first got hold of it. It has been so widely distributed by nurserymen under the erroneous name that it has been found difficult to make the correction.

FRUITS AND VEGETABLES.

PROFITS FROM STRAWBERRIES.—It is said that a person with a small garden at Manhattan, Kansas, set out 1,025 strawberry plants, and sold the products, keeping an account of receipts and expenditures. These plants occupied one-sixth of an acre. On this it is officially announced that in Kansas, strawberry growing will net the cultivator $796 an acre clear of everything. One might readily show, by taking a square yard instead of a larger tract, that very much more than that could be obtained "per acre," yet it is safe to say that no one ever has, or ever will realize a clear profit of $796 per acre from strawberries.

CRANBERRY GROWING.—Cranberry growing, in Nova Scotia, is said to be profitable when free from insect attacks; but these, of late, have been so numerous and troublesome, that the profits of cranberry culture there are said to be precarious.

A LADDER FOR FRUIT-PICKING.—Anyone who has done much picking of fruit from large trees, using an ordinary ladder, knows how inconvenient a thing it is to handle in moving it around to various portions of the tree. The long top round makes a breadth which, with the two projecting points—the ends of the side strips—makes an awkward thing to thrust in amongst the branches. The best style of ladder is that which brings the top up into a decided point, which is easily placed anywhere amongst the branches, and quickly. But if instead of a finished point it simply runs to a short round,—say four inches long,—it will not be very awkward to handle, and will enable its being placed more securely against limbs running more or less perpendicular.

ASPARAGUS.—Among the simple facts of gardening, the most widely know is the one that healthy leaves are essential to the growth of plants. If a plant be deprived of its leaves as they push out during a whole growing season, that plant will surely die. This question often comes in when the proper management of an asparagus bed is considered. If we cut every sprout as fast as it appeared to the end of the year, there would be little growth the season following. The rule is to cut everything as it appears up to about midsummer, or up to what one might term the end of the asparagus season, and then let the sprouts that follow go on and make foliage for the strengthening of the plant. Much, however, will depend on the strength of the plants themselves. The younger and weaker the plants, the longer should be the later season in which they are to be allowed to enjoy the benefits of strengthening foliage.

SCRAPING THE OLD BARK OF FRUIT TREES.—Trees have no more use for old bark than for old leaves. In every healthy tree, nature provides means for getting rid of it, but these are not always as active as they should be, and art has to help where nature fails. Hide-bound trees, and scaly-barked trees, must be assisted by washes, and by scraping where the old bark is scaly and does not pass freely away. This is the plan for temporary relief. But a permanent care is by liberal manuring. A tree in prime vigor will take care of its own useless bark.

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SWEET CELERY.—Mr. N. J. Johnson tells the South Minnesota Horticultural Society, that it is not so much the bleaching process that takes the bitterness out of celery, of which so many complain. What the celery plant requires, to have it nutty and crisp, is a rapid growth in autumn. To secure this, the plant must have an abundance of manure and plenty of moisture. With this, he has good crops from double rows, with the plants six inches apart, and side-boards instead of earth for blanching.

TO GET RID OF TENT CATERPILLARS.—Prof. Greene, of the Experiment Station, Minnesota, says :—"The Tent Caterpillar has occasionally been somewhat injurious in our orchards, but a little attention has prevented our having any serious trouble from this cause. Our best remedy has been the destroying of the egg clusters, which may be easily seen in the branches in winter and early spring, and in gathering the worms in their tents as soon as they hatch out. It should be generally understood by our people that a dozen apple trees well planted and cared for will produce more fruit and be far more satisfactory than a large number of trees set out in the ordinary, neglectful way."

FRUIT-PACKING FROM SEVERAL STANDPOINTS.—What makes it necessary that almost every house-keeper, in buying packages of fruit, should find it necessary to have a package tilted up for view of the contents towards its centre? Simply to see that it corresponds with those on top,—an indication that the fruit-packer is inclined to deceptive methods. That a large majority of fruit packages are "topped" with specimens superior to what will be found further on, will be generally acknowledged. It is not always the fault of the fruit-grower; it may be done by the commission-man, the store-keeper or the huckster. Is it not deplorable that honesty and fair-dealing cannot be extended to the handling of fruit as it is in other lines of trade? Or is it that some do not consider it dishonest or unfair to display what is practically a sample of fruit and then deliver something more or less inferior? Judging by the remark of a commission merchant made before the State Horticultural Association, where he advised fruit-growers to "top" their packages, evidently the gage of morality differs among people. In quite another tone, another speaker at the same gathering advocated the desirability of putting up fruit in the most attractive manner, but absolutely uniform as to quality and grade. It is that which makes Californian fruit saleable in Eastern markets, and by no means its quality. This careful method of handling is of no use unless the consignments from a grower be individualized by a seal or brand, through which the consumer may learn that fruit from that grower is to be relied upon. There would be waste in sorting out inferior fruit,—though, kept separate, some disposition could be made of it with a smaller monetary return; while the higher graded fruit should bring more money. It is with the same idea of raising the standard of his fruit, and increasing its value, that the intelligent grower of peaches and plums finds it advantageous to thin out the fruit on an overloaded tree, rather than use props and get more but inferior fruit. Where a certain grower's fruit can be recognized and can be depended on to be first-class throughout, or at least uniform from the top of the package to the bottom, the consumer should show his appreciation of a desire to give good service, by bestowing his patronage on that person.

IMPROVED CUBAN QUEEN WATERMELON.—The old Cuban Queen Watermelon has long been recognized as the leading shipping and commercial melon of the country. I have a sport of this melon that far supercedes the old Cuban Queen. The new melon is the wonder and admiration of all who see it, as it is a third larger than the old variety; and for sweetness and delicious flavor it stands unrivalled. In fact, melon growers of varied experience pronounce it the greatest watermelon ever grown. Single vines perfect from six to eight melons, averaging in weight from 75 to 120 pounds.

The seeds of this melon are brown. The flesh is the most vivid crimson red, melting and sugary. These melons are the greatest shippers known, also marvelous keepers. The vines are rampant, vigorous growers, and very healthy. This is the melon for the millions, as it succeeds on all soils.

I have tried all melons as fast as they originated, and were disseminated; but none equals this new melon. S. L. WATKINS.

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BIOGRAPHY AND LITERATURE.

THE INSPIRATION OF NATURE.

"I drank sweet draughts from the perennial springs
Where, by the sylvan Neckar's castled hills,
The Muses with their melodies preside
Over immortal fountains,—and entranced
I floated down the ways of storied streams,—
Mused 'mid the ruins of a bygone age."

HOWARD WORCESTER GILBERT.

THE CONCORD GRAPE; MEMORIAL TO ITS ORIGINATOR.—In one of the early numbers of MEEHANS' MONTHLY, Dr. Lamborn suggested that the nation owed a debt of gratitude to the raiser of the Concord grape, and he was ready to aid if some one near-by would undertake it. Subsequently to this, in 1893, as we learn from the *Country Gentleman*, Mrs. Daniel Lothrop, a neighbor, bought the little homestead and the 12-acre plot surrounding, on which the grape from the wild seed was raised, for the purpose of keeping it for ever as a memorial.

Mr. Ephraim W. Bull died there on the 26th of March, 1895. Mrs. Lothrop has now put the place in thorough repair, along all its original lines. In one of the rooms is a tablet with Mr. Bull's own account of the origin of the grape, and everything is done to preserve the house and the old grape-vine. Pleased as all will be that the memorial to the greatest event that has occurred in the history of American grape culture, has at length been secured,—one must not forget to honor the lady, Mrs. Lothrop, for the happy manner in which she has accomplished what was so widely desired.

PLANT MYTHOLOGY.—The Greeks and Romans of ancient times are not the only people who have curious, mythological stories about the origin of flowers. Scandinavian literature abounds with these pretty tales. Even our Indians had their say, in like manner, about these things. Among some of the Canadian aborigines, pines and cedars originated from strong men who were planted by their feet in the ground, and branches grew out from their bodies, in response to wishes to live forever. It is singular that similar stories about the origin of evergreens have prevailed among ancient man in many isolated points. The "tree of life" in Babylonian history was undoubtedly the Cedar of Lebanon,—and the Deodar Cedar, a close relation of the Lebanon Cedar, is the "tree of life" of the ancient Hindoos.

THE PINXTER FLOWER.—In the June MONTHLY, in connection with the Swamp Azalea, *Azalea viscosa*, you speak of it as the "Pinxter bloom" of the Hollanders about New York, on authority of Governor Colden, and that Britton and Brown are wrong in giving the name to the *Azalea nudiflora*. As a Hollander by descent, and knowing from my ancestors for a century back, I wish to say—

1st. I have never known or heard of *Azalea viscosa* being called "Pinxter bloom."

2d. I have always heard the name applied by the Dutch descendants to *Azalea nudiflora*.

3d. The name it is called by now is generally "Pinxter blossom" or "flower," the "bloom" being an anglicism of the Dutch word "blume," meaning flower.

I wish to add, also, the following:—

1st. I do not know that the Dutch ever dress the "postulants" in "long flowing, white robes," when received in baptism. My ancestors have for centuries been in the Dutch Church, and I am a clergyman in the church, and I never heard of it. The custom of wearing white, at least around here, is German—never Dutch.

2d. Easter is the first Sunday after first full moon, after the spring equinox, I believe. It may vary from about March 23d to April 24th. Pentecost is fifty days after, or from about May 12th to about June 13th.

3d. After many years collecting, I can say *Azalea viscosa* is on Long Island rarely in bloom before June 15th. The time for *Azalea nudiflora* is from about May 15th to May 30th. Two years ago it was in fair shape on Decora-

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tion Day. This year it was earlier. So *viscosa* is never in bloom for the latest Pinxter, and *nudiflora* comes about the midst of the season.

Brooklyn, N. Y. GEO. D. HULST.

THE HARDY ORANGE.—Nurserymen find it impossible to follow botanists in their continual changing of plant-names. When a plant has been extensively known under a certain designation that has been acquiesced in by botanists, to be told that botanists have heretofore blundered and the name must, therefore, be changed, means a commercial loss to them. If the nurseryman adopts the new name, he has to advertise all over again to let his customers know that the new name is no new thing. But even then there is no assurance that the corrected name will not be again corrected. A recent illustration of this refers to the hardy orange. Linnæus first thought it a genuine member of the orange family, and described it as *Citrus trifoliata*. De Candolle thought Linnæus wrong, and removed it to another genus, *Ægle*, and describes it as *Ægle sepiaria*. *Index Kewensis* does not sustain this view, and it appears there under the Linnæn name with that of De Candolle as a synonym. Now comes the *Gardeners' Chronicle*, of April 28th, with a note by Mr. Nicholson, the curator of Kew, in which the name of *Ægle sepiaria* is again revived for our former hardy "orange." When two high authorities, both in Kew Gardens, disagree as to the legitimate name, what is the unfortunate nurseryman to do?

OUR NATIVE GRAPES.—Bulletin No. 56, College Agricultural Station, Brazos County, Tex., is devoted to an account of the experiments on the Munson Experiment Grounds, at Denison, Tex., and is a valuable contribution to the history of American grape culture.

TRAVELS OF THE WEEPING WILLOW.—The following paragraph is floating through the great sea of the public press:—

"It is stated that the first willow trees in Philadelphia (which grew on the sight of the Custom House) resulted from an accidental discovery on the part of Benjamin Franklin, who found a wicker basket, which had been thrown into a damp place, sprouting. He felt much interested, and gave some of the cuttings to Charles Morris, who planted them on his place. The stalks took root readily and thrived, and a number of willow trees resulted."

It is stories like this that throw a shadow on all history. No "wicker" basket was ever made of the weeping willow. The twigs can be as easily broken as glass, and are wholly unfit for wicker work.

The original weeping willow came to Hampton Court, England,—but not in the shape of an old willow basket found on the Thames.

FAIRMOUNT PARK (PHILADELPHIA) ART ASSOCIATION: TWENTY-EIGHTH ANNUAL REPORT.—This gives an account of what has been done for the beautifying of this great pleasure ground during the past year. The chief regret, while reading is, that landscape gardening, as one of the fine arts, seems wholly ignored,—and the beautiful objects the association has secured, are often placed in the most incongruous situations, until the park is fast taking on the aspect of a cemetery, in which architectural adornment is the chief consideration.

MRS. MARTHA LOGAN'S TREATISE ON GARDENING.—In Prof. Bailey's History of American Gardening, he gives credit to Mrs. Martha Logan's fine grounds near Charleston, and a good treatise by the lady as among the earliest contributions to American gardening. Never having seen the work, the conductors made inquiry of several subscribers to the magazine in that quarter. One writes: "There is no record of Mrs. Logan's book ever having been in the library. General Logan says it was only a pamphlet, and though it was thought highly of at the time of its publication, he does not know of a copy to be found now."

NATIVE TREES OF RHODE ISLAND.—A separate pamphlet from the annual report for 1899, of the Rhode Island State Board of Agriculture, has been published, giving an account with illustrations of the native trees of Rhode Island, by Levi W. Russell, of Providence. The pictures show some oaks to be far more beautiful when they can get a chance to grow isolated. The Black Jack Oak, *Quercus nigra*, as here exhibited, and as we have sometimes seen them, makes as handsome a plant as the famous Southern Magnolia.

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GENERAL NOTES.

ORIGIN OF GREENHOUSES.—Mr. Wm. Watson, of Kew, says that the first greenhouse erected in England, was in the Apothecaries' Garden, at Chelsea, in 1684. It merely had glass sides, and was heated by a kind of oven. In 1717, a glass-roofed house was built by the Duke of Rutland, at Belvoir Castle, for foreign grapes, heated by furnaces placed under the floor of the house. Steam was first used in 1788; and hot water, soon afterwards, was applied to a small house in the Jardin des Plantes, at Paris.

MUSHROOMS — THE FALSE ORANGE. — Mr. Joannès Chatin has presented to the Academy of Medicine, in the name of Dr. Dantec, member of the Bordeaux Faculty of the Navy, a very interesting work about the false orange, *Amanita muscaria*.

It is known that of all mushrooms that have caused the most accidents in France, 90 per cent. are imputable to this species.

Mr. Le Dantec has thoroughly taken up the study, analyzed the principal factor (*muscarine*) by a new process, ascertaining it to be a poison for the heart, and showing, by a long series of experiments, that atropine is the best antidote for opposing it. From *Lyon-Horticole*.

NAME OF THE RED SEA.—The Red Sea is so-called from its color. This color is said to be owing to the presence, in immense quantities, of a microscopic water weed, named *Trichodesmium erythræum*.

HONEY.—It is a notorious fact that pure white Clover Honey, is a scarce commodity in the market. Much honey that is sold as such is a preparation of glucose. It is pronounced to be as good as honey, and in this way the seared conscience is salved over. But the conscience is not seared by the thought that as much is asked for cheap glucose as the honest man receives for the genuine article. To sell glucose for honey, at honey prices, is fraud. There are abundant laws against such frauds; but there is no provision made for executing the law. In all large communities there should be established a department especially charged with the execution of laws. At present, little is done unless some citizen or organization complains. It costs a fortune for any one person to get justice in most cases.

NEW VARIETIES OF GRAIN.—A cable dispatch to the New York *Sun*, notes as something wonderful that, on the experimental farm of the Earl of Winchilsea, new varieties of grain have been raised by crossing. Raising new varieties in this way is not a novelty. But the Earl deserves credit for doing so much in the line as he has done. It is one of the surprises that more is not done in the way of raising new fruits, vegetables and grains by crossing varieties, than by the usual easy-go-easy course of watching for accidental sports. When we remember the wonderful results achieved by Rogers and Jacob Moore, nearly a generation ago, with the artificial crossing of the native and foreign grape, one might reasonably hope for more laborers in this promising field.

AMERICAN FORESTRY.—The town of Brunswick, Maine, owns one thousand acres of land, which they will plant in white pine as a public investment.

SNOWBERRY.—A correspondent of the London *Gardeners' Chronicle* would transfer the name of Snowberry to *Chiogenes serpyllifolia*, and says:—"It has also been described by different botanists under the various names of *Vaccinium*, *Arbutus*, *Gaultheria*, and *Oxycoccus*; it seems to have a much stronger and more valid claim to the English name at the head of this note than the shrub which now bears it, *Symphoricarpus racemosus*, as it flowers and fruits in its native country soon after the melting of the snow; and its fruit is pure white."

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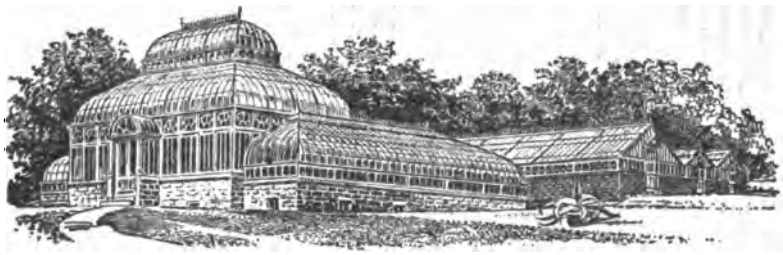

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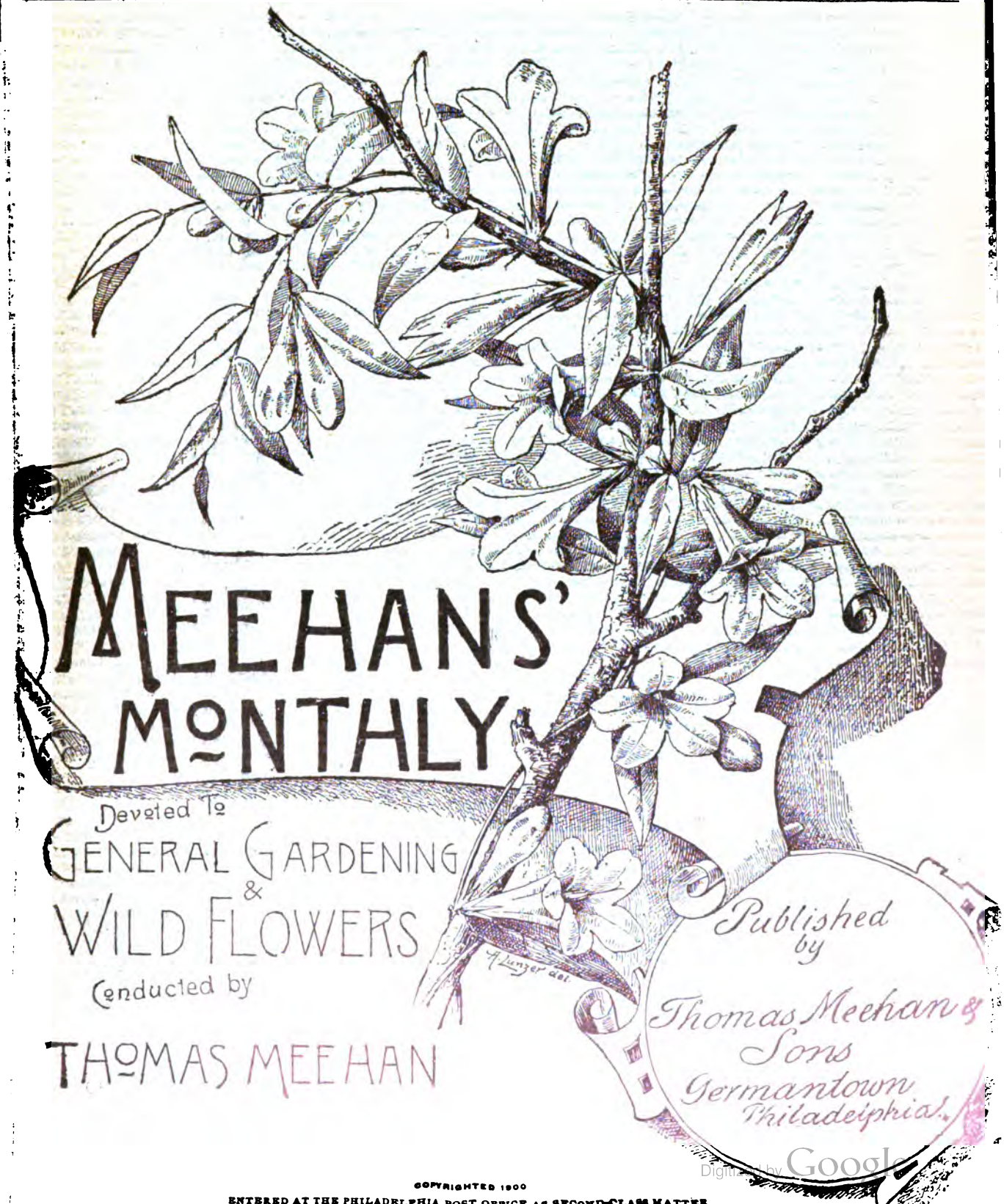

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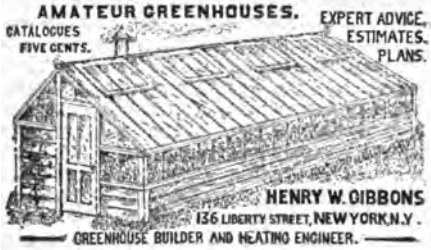

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NELUMBIUM LUTEUM

NELUMBIUM LUTEUM.

WATER CHINQUAPIN.

NATURAL ORDER, NYMPHACEÆ.

NELUMBIUM LUTEUM, Willdenow.– Corolla pale yellow,—anthers tipped with a slender hooked appendage. Leaves usually raised high out of the water, circular in outline, with the centre depressed or cupped, one to two feet in diameter. Flower five to ten inches broad. Tubers farinaceous and edible. Seeds also edible. Embryo like that of *Nymphæa* on a large scale. Cotyledons thick and fleshy, enclosing a plumule of one or two well formed young leaves, enclosed in a delicate stipula-like sheath. Gray's *Manual of the Botany of the Northern United States.* See also Chapman's *Flora of the Southern United States*, Wood's *Class-book of Botany*, and Britton and Brown's *Illustrated Flora of the Northern United States, Canada and the British Possessions*, under the name of *Nelumbo Nelumbo.*

The Sacred Lotus, *Nelumbium speciosum*, has a famous place in history. In our times, flowers are prominent incidents in festivals,—in the long past, they seem to have been the essential features, especially in religious ceremonies. In this class appears the *Nelumbium*, or, as it is often called, the Lotus or Sacred Bean, especially among the Asiatic races. The American *Nelumbium*, herewith illustrated, is practically the same as the Asiatic species, the only difference is that in the American there is a small appendage at the apex of the stamen. In color, the American is yellow, rarely white, —the Asiatic is rose color, or occasionally white or bluish. So far as the American species is concerned, there seems to have been no special reverence in regard to it by the aborigines. The roots very much resembling sweet potatoes, and the acorn-like seeds, being in request for food,—and the dried seed vessels serving as rattles for the papooses.

The two allied species go very often under the style of the Sacred Bean or Lotus of the Nile,—but this is a mistake. The *Nymphæa Lotus* is the Lily of the Nile, though the Sacred Bean of India, the *Nelumbium*, appears to have been introduced to the famous river of Egypt, and to have been somewhat common in the days of Egypt's greatness, though it has seemingly disappeared in modern times.

It must be confessed that the true *Nelumbium* may have been indigenous to Egypt, if we rely on the histories of the manners and customs of the people as reported to us. We are told that the lotus was a favorite flower in making wreaths, and that at social gatherings a lotus was the favorite flower to present to guests, as a rose or carnation would be to-day. Further, we are told that necklaces of lotus flowers were marks of distinguished honor,—and that garlands or head-dresses of flowers were so arranged that a single lotus bud or full blown flower hung in the centre of the forehead. Sir G. Williamson, regarded as an authority on Egyptology, says that vases filled with lotus blossoms were the special prerogative of the master of the house. Accepting these statements as correct, they must refer to the *Nelumbium*, as the transitory nature of *Nymphæa* flowers would unfit them for serving such purposes.

The name *Nelumbium* is derived from the vernacular East Indian name, "*Nelumbo.*" Indeed, the earlier botanists adopted the name for the genus; but with the reorganization of botany, in the times of Linnæus and Jussieu, it was thought desirable, as far as possible, to reduce to Latin form all generic names, and so the last-named distinguished botanist rendered *Nelumbo, Nelumbium.* This was generally accepted, and Willdenow, another famous author, describes our plant as *Nelumbium luteum.* In describing the genus, he remarks that *Nelumbium* differs from *Nymphæa*—our common water-lily—in the numerous pistils, sitting with their fruit on the receptacle, showing in this some affinity with the strawberry.

Aside from the size of the flowers, and general peculiarities, there is little of beauty to awaken enthusiasm in the lotus. Percival makes his Frenchman prefer a humbler competitor for human affection:—

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"I ask no deep-encrimsoned flower
From India's never-fading bower;
No lotus, where it closely weaves
The Ganges with its azure leaves;
I ask no pensive bud of woe,
That gives the night its wreath of snow;
All these may have a charm,—but yet
Thy charm is more, Sweet Mignonette."

Even its life-history is almost a blank chapter. When Longfellow, in Evangeline, chants:—

"Thus 'ere another noon, they emerged from the shades; and before them
Lay, in the golden sun, the lakes of the Atchafalaya.
Water-lilies in myriads rocked on the slight undulations
Made by the passing oars, and, resplendent in beauty, the lotus
Lifted her golden crown above the heads of the boatmen."

No one has been able to say with certainty that the lotus never lifts its crown so high. Prof. Porter, however, on a visit to a locality for the flower in Sussex County, N. J., in 1878, did venture the remark, from what he saw there, that Longfellow had committed a practical exaggeration pardonable in a poet. And yet it has been before the lover of flowers longer than most of the natives of our country. Leonard Plukenet, in his "Phytographia," published in 1691, gives a good figure of it, and describes it as the nut-bearing *Nymphæa* of Virginia, with large flowers of a pale yellow,—this, no doubt, from some drawing furnished him. It is credited as being introduced to British gardens in 1810; but, up to 1824, Sir William Hooker had never seen it, as the author notes by an autograph letter addressed to Zaccheus Collins, Vice-President of the Academy of Natural Sciences of Philadelphia. Growing near Philadelphia, he asks Mr. Collins to send him some. So early as 1750, we find Peter Collinson reminding John Bartram that the "*Faba Ægyptica*" had been found near Philadelphia by Peter Kalm, and asks Bartram to send him some. In 1760, he scolds Bartram. "This reminds me," he says, "of the elegant species of water-lily that is in the Jerseys. Does it occupy such a depth of water that the roots can't be come at? Thou art ambitious of plants from us: but here is the most charming plant of Asia, including China and Egypt, in thy neighborhood; and yet so little is thy curiosity, or industry, that thou canst not avail thyself of so great a curiosity. Thou that hast springs in thy garden to make a pond for its reception, or a river close by, if more proper for its culture. Prithee, John, nevermore let me reproach thy want of taste or curiosity in this article. If I was in thy place, I should spare no pains or expense to be possessed of a curiosity that none in thy province could boast of besides thyself; which thou art ambitious of in other plants in no comparison so charming when in flower." Until Kalm found it at Philadelphia, Collinson says, it was only known as from Carolina. During the latter part of the century just closed, botanical literature teems with notices of locations discovered in many parts of the seaboard States of the Union, and of Canada.

In a letter to the author, dated August, 1878, in speaking of the discovery of the plant in Lake Calumet, Mrs. E. M. Brackett, of Chicago, graphically describes the seed-vessel as "resembling the rose of a water-pot," and had been informed by one versed in Egyptian history, that the *Nelumbium* was artificially cultivated in the Nile, in the early ages, by putting a seed within a ball of clay, and dropping the ball in the river where a plant was desirable.

In regard to culture, some interesting facts were contributed to the *American Naturalist*, ninth volume. In 1872, seeds were sown in an aquarium. Only one germinated that year,—the others did not grow till four years and a half later. The remarkable fact was that the seed came to the surface to sprout, then sank to the bottom, from which it sent up petioles and leaves, but no root down into the mud at that time. Something of this sort is recorded by Dr. W. C. P. Barton, in his Flora of America, in 1822. He describes the seeds as viviparous, sprouting in the receptacle, which he says breaks off at the summit of the peduncle, and then floats away, and in this way the plants are widely distributed over the lakes or ponds where they grow. After sprouting, they drop in the mud.

EXPLANATION OF THE PLATE.—1. Miniature sketch, taken by the artist, Mr. Alois Lunzer, at Woodstown, N. J., for Messrs. Prang, showing all conditions of the growing plant. 2. Full-sized bud ready for expansion. 3. Torus, from a flower about to fade, with the stigmas in receptive condition. 4. Stamen, showing the peculiar appendage at the summit of the anther, distinguishing the American from the Asiatic species. 5. Torus, nearly mature, showing by the ridges that it is composed of a number of consolidated carpels.

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WILD FLOWERS AND NATURE.

THE WALKING FERN.

"Down the rock comes the walking fern,
There stands in the pool the listening hern,
And even the gaudy butterfly
Pauses awhile as she flaunteth by,
And a lesson to all unconsciously gives,
Through the useless and frivolous life she lives."

HOWARD WORCESTER GILBERT.

IDENTIFICATION OF OSMUNDA REGALIS.—The fern sent the conductors, from Long Island, for identification, proves to be *Osmunda regalis*, the beautiful King Fern. It is a water-loving plant, and at home may be seen growing to a height of five feet. Though the fronds are delicate, it transplants readily.

NELUMBIUM LUTEUM.—Regarding *Nelumbium luteum*, it may be further noted that a singular fact in the life-history of the plant is related by Charles F. Cox, in the *American Monthly Microscopical Journal* for 1880. Hairs are found in the hollow spaces of the petiole in the *Nymphæas*, but not in the *Nelumbium*. This may be owing to the manner in which the petiole is formed. A petiole, morphologically, is but the uncoiled leaf-blade. Whether it is incurved or recurved in the formation would tend to include or exclude the hair. In Vol. 7 of the Bulletin of the Torrey Botanical Club, Mr. H. H. Rusby notes that the leaves look like two long rolls before the expansion of the blade. It would appear from this that the condition was incurved.

The seeds are about the size of the Chinquapin, and from this the plant has received the name of Water Chinquapin, in America. They, however, more nearly resemble the acorns of the Pin Oak. Wild ducks are very fond of them.

Mr. L. B. Case, in the "Botanical Index," describes the sweet-potato-like roots as having a number of hollow spaces, running longitudinally with the tuber, and that when cut across the tubers exude a large amount of milky juice. The farinaceous matter is very abundant. There are no buds on the tubers,—growth takes place from the junction of the tuber with the main stem, as in the dahlia,—and the failure of the plant to grow when removed is probably due to the oversight of this fact.

HONEY GUIDES IN THE DARK.—There is a hypothesis, though scarcely satisfactory to some thinkers, that certain color-spots or lines in flowers are provided as guides to the nectaries of honey-secreting flowers, in favor of insect visitors. But the arguments against this are often as weak as those in favor thereof. For instance, it has been asked how the night-flying insects make use of honey-lines in the dark! But surely nocturnal insects are supposed to see as clearly by night, as the diurnals do by day.

CAVE PLANTS.—I remember reading, in Mrs. Ketchum's "Botany," that certain translucent ferns are found growing in limestone caves in Florida. I cannot now recall the name of the species. G.

WANDERINGS OF PLANTS.—Plants, like animals, are continually wandering to fresh fields and pastures new. Prof. Kellerman finds that of the present flora of Ohio, no less than 430 are immigrants. Almost all are from Europe.

SYMBIOSIS.—A recent inquiry, in regard to a root fungus being essential to the healthful growth of the heather, has attracted the attention of our readers. The *Journal of the New York Botanic Garden* states that mycorhiza—root fungi—are found in connection with all orchids. The fungus prepares the food for the orchid,—and the orchid returns to the fungus starch and sugar, on which its growth depends.

HORNETS' NESTS.—Many years ago, the writer of this made a communication, to the Academy of Natural Sciences of Philadelphia, noting that, in the preparation of the paper for their nests, the hornets chewed up the bark

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of the ash tree. Since that time, no other tree, in the same vicinity, seems to have been used for that purpose. There must be hornets in some places where there are no ash trees,—and it would be well to know what tree is used in these cases. There is a good chance here for watchful observation.

THE INDIAN GROUND-NUT. — Photography can be easily learned. Anyone can take a snap-shot of some object. But the true artist is rare among the camera fraternity. We have pleasure in presenting to the reader a representation of the Indian Ground-nut, taken from a photo by Mr. C. E. Pleas, of Chipley, Florida. The plant was selected from a group at St. Andrews Bay, Fla. No more accurate representation of the *Apios tuberosa* has ever appeared,—while as a picture, merely, it will commend itself to the lover of art, though he may not know a bean from a butterfly. The photograph was taken during a rain.

THE INDIAN GROUND-NUT—APIOS TUBEROSA.

MODIFICATIONS IN PLANTS AND ANIMALS.—Botany has an advantage over zoology in the discussion of matters connected with variations, in this that aberrations from the normal conditions are more numerous and capable of closer investigation. Yet there are frequent instances of remarkable variations from usual forms in the animal world. In Germantown, near Philadelphia, a Mr. Bichy, a druggist, had a fondness for raising tadpoles in an aquarium, and watching their development to frogs. One tadpole, a few years ago, did not shed its tail, as it usually does. Not having lost it at the usual period, it continued as a caudal appendage the whole of the creature's life—five years. It grew to the usual size of these creatures,—but, while the hind pair of legs developed as usual in frogs, no forelegs ever appeared. The head continued in tadpole form, except that the lower part became loose and fluffy, as in frog-life.

A fact like this would indicate to some of the modern schools of philosophy an argument in favor of progressive development as to the origin of the various species of plants and animals. To another class it would seem that species might originate by a suppression of energy in some directions, and an enlarged effort in another, but affords no evidence of the origination of any new organ, such as many modern scientists understand by evolution.

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GENERAL GARDENING.

THE MIGNONETTE.

The rose may sparkle in the morn,
And blush and brighten on its thorn;
The gaudy tulip proudly spread
Its glories o'er the enamelled bed;
The iris imitate the bow,
That sunbeams on a tempest throw;
All these may shine around,—but yet
I love my darling mignonette.

PERCIVAL.

MYROBALAN PLUM FOR HEDGES.—Regarding your notes, in the June issue of the MONTHLY, on the Myrobalan Plum as a hedge plant, I would say that such a hedge fence has been tried here. It was planted in 1893, and has for the last four years been a beautiful hedge, pruned to a height of some 5 feet. It makes a splendid hedge fence, as no one—or even stock—will attempt to go through it. It responds well to pruning, and, so far as the writer has seen, has never been troubled with the plum borer; but alas, the San José Scale has proved a worse enemy to contend with here, and where there is any danger of the hedge being infested with this pest, I have no hesitation in saying that the Myrobalan Plum will prove a grand failure.

Greenwich, Conn. JOHN W. DUNCAN.

CAMPHOR TREE AND HARDY FUCHSIA.—On page 103 I notice you speak (or your correspondent, G. N. Carruthers), of the cold having killed the Camphor tree at New Orleans. One year ago last February, I planted one at Veron, Onslow Co., N. C., and, visiting there last February, found it had not only grown, but had made a growth of more than 2 ft. 10 in. high. When set out, it had grown at least to a height of from 2½ to 3 ft., freely branched, not a twig or leaf blighted or harmed, and of course in full leaf looks much like a young wild cherry. We had frost of 12° below freezing for two or three days. The last two nights I covered it with thin muslin. The leaves looked frozen, hanging down, but did not seem in the least harmed two weeks afterwards. As you state, China Tree seems quite at home there.

Hardy Fuchsias, on page 104:—Some twenty years ago, I visited my mother's birth-place on Loch Awe, Argyleshire, Scotland. By a wall, on the old farm, facing east, was a plant growing along some 20 or 30 ft., 5 to 6 ft. tall, covered with small red buds, which attracted my attention. On examination, I found it to be a fuchsia with very small flowers. I afterwards found it was used as a hedge plant, occasionally, or screen.

I have two lespedezas growing finely, considering seashore and other conditions.

West End, N. J EWEN MCINTYRE.

ROSE, CRIMSON RAMBLER.—The London *Gardeners' Chronicle* notes a plant of the Crimson Rambler, at Bicton, that had about 700 clusters of flowers on it at one time. This was far surpassed by a Philadelphia specimen the past season, which had 9,600 flowers.

LÆLIA MAJALIS.—That fine orchid, the most beautiful of all lælias, *L. majalis*, has just bloomed here, and indeed no words can overpraise its beauty. This plant is found very hard to flower in most collections, but I think probably, in many instances, the failure to flower it arises from the failure to procure a strong plant to start with. No trouble at all was experienced in the flowering of the plant in the collection here. Its main requisites are: First, perfectly clean potting material, which should be peat only. It may be top-dressed neatly with living sphagnum moss, which greatly improves its appearance. Secondly, plenty of light, but no sun; water only enough in winter to keep bulbs plump and a night temperature of about 45° to 50° during winter, increasing to 55° during the early spring. Day temperature 10° to 15° higher. As growth advances, increase water supply, and once in ten days give the plant liquid manure, as a strong growth is imperative to the production of a

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flower. It flowers with the young growth; and those who follow treatment given will be rewarded with a flower when once seen is not soon forgotten. Its beautiful lilac-rose petals and sepals, and its beautiful three-lobed lip, white inside, striped magenta-purple, will be a source of great pleasure to behold. The plant here was grown (as it always should be) in a basket suspended about a foot from the glass.

Rahway, N. J. A. P.

LANDSCAPE PLANTING.—One of the leading points in the skill of a landscape gardener, is to plant so that the area of the grounds will appear larger than it is. It is a rare art, for in many plots supposed to be well laid out, as the term is, the result is to contract rather than to enlarge the apparent space. An illustration of the correct idea of planting appears in a photograph before us, of a scene in the garden of Mr. James Ellwell, now deceased, of Brooklyn, N. Y. It is very difficult to apply this great principle in landscape gardening on a small suburban plot, or (we might almost say) a city yard. It would be impossible, in this case, to conceal the boundary fence, and perhaps unwise to do so, even though possible,—but the method of planting on these grounds seems to throw that boundary farther away than it really is. It is a pleasure to commend these illustrations of landscape gardening as the fine art it should really be.

GROUNDS OF JAMES M. ELWELL, BROOKLYN, N. Y.

BIRCH TREE BORER.—A correspondent says that birch trees all over the country are dying, even trees fifty years old seem to die in a few weeks during summer. He sends a sample of the leaves that are turning yellow to note what is the matter. Nothing was found the matter with the leaves, but if the correspondent had thought to split the twigs he would have found them but shells, a boring maggot having cleaned out the whole centre. If the whole tree is perforated in that way, even fifty years of age could not save it.

HONEY APHIS.—The large honey aphis has been unusually abundant this year, and has afforded the newspaper reporters in Chicago, and other large cities, the opportunity of getting off smart paragraphs about a "new and wonderful bug." The honey aphis really is

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not so serious an enemy as its smaller relatives, as it sucks from the bark, and not from the veins of young leaves,—but they have a disgusting appearance on the branches of the trees.

HARDY EVERGREENS.—When in search of evergreens particularly hardy and yet very choice, do not overlook the Colorado Blue Spruce. This native inhabitant of the Rocky Mountains endures the very coldest temperatures, and when well established will make one of the prettiest decorative evergreens, in color and form, that can be desired. It grows just rapidly enough to avoid an unnatural compactness, yet always maintains a regular, symmetrical growth that makes it prominent among other evergreens. Seedlings yield a great variation in color, from a light green to a bright steel-blue. Grafted specimens, secured from trees of the best color, are the best to obtain. The arbor-vitæ is a commoner tree, though the many varieties offer ample room for choice of pretty and desirable kinds. But it is perfectly hardy and thrives almost anywhere except in shade.

ALPINE PLANTS.—Plants have a great power of adaptation to circumstances and surroundings; and especially seem to make an effort to produce seeds. I have seen a morning-glory seed, planted late in the season, making haste to bloom while low on the ground; and the same, in early spring, would make a luxurious growth of vines and leaves before a single blossom appeared. Dear Mrs. Howitt wrote:—

"God might have made the earth bring forth
Enough for great and small,
The oak tree and the cedar tree,
Without a flower at all."

San Diego, Cal. MRS. E. E. ORCUTT.

FUCHSIA CULTURE.—The fuchsia is one of the most beautiful of pot plants for flowering all summer, but in most part of our territory it is only successful when the pots are placed in partial shade.

PARIS STREET TREES.—Wide streets and handsome street trees help largely in the fame of beautiful Paris. But the success of the trees is due to intelligent oversight by the authorities. Even with this admirable protection, the average life of a Paris street tree is found to be but half that of those growing in the environs. Of varieties, the following have been found best suited to the conditions of Paris, preference being given in the order named:—Horse-chestnut (which is much the best), plane, ailantus, locust, linden, and paulownia.

GROWTH OF LANDSCAPE GARDENING.—Landscape gardening in this country is yet largely in its infancy, and just as the human infant is taught to acquire its knowledge step by step, so must the people be taught, step by step, the fundamental principles of the question involved. To appreciate any profession and improve thereon, we must first learn the foundation on which it is built, for if familiarity with the foundation is lacking, the building of the necessary knowledge is at least faulty and laborious.

Landscape gardening is an art—not necessarily a study only. It matters little how much a person may know about trees and flowers, their growth, foliage and habits, if he have not the appreciation for a purely natural piece of landscape, nor the feeling and instinct to construct similar effects, he can never hope to be successful in the higher art of landscape gardening. Do not infer by this that study and knowledge of the character of plants are not necessary,—far from it,—for without this knowledge the construction of a pretty landscape would be impossible, as one of the most important things is that we must picture in our minds what the effect will be,—not this year, or the next, but when the trees shall have eventually come to maturity. This would of necessity be impossible without a thorough knowledge of every plant and tree used.

It cannot be too strongly emphasized that landscape gardening is an art, and, like all other arts, a talent which must be exercised,—not buried,—to be brought to its highest state of perfection.

What is the object of landscape gardening? You may infer from what has been said that it may be practised only in the country, where unlimited space abounds, therefore, what can it mean to those who may be within the limits of a large city, or who simply own an acre or two?

In these days of progression, man stops at nothing. He has caged the lightning of the clouds and brought it to our cities for light and

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transportation. Even the mighty Niagara has been bridled to men's wants. So in landscape work we must try to bring Nature's beauty right to our homes and cities. Of course, not in its entirety, any more than we could bring the waters of Niagara actually to our doors; but we must bring its powers, its summer conbinations of color in foliage effect, and its berried effects of fall, not forgetting the warm and bright winter appearance of the various colored barks of many trees and shrubs. Take these powers and use them to relieve the monotony of bricks and mortar. In other words, let landscape gardening mean the reproduction of Nature's work wherever possible.

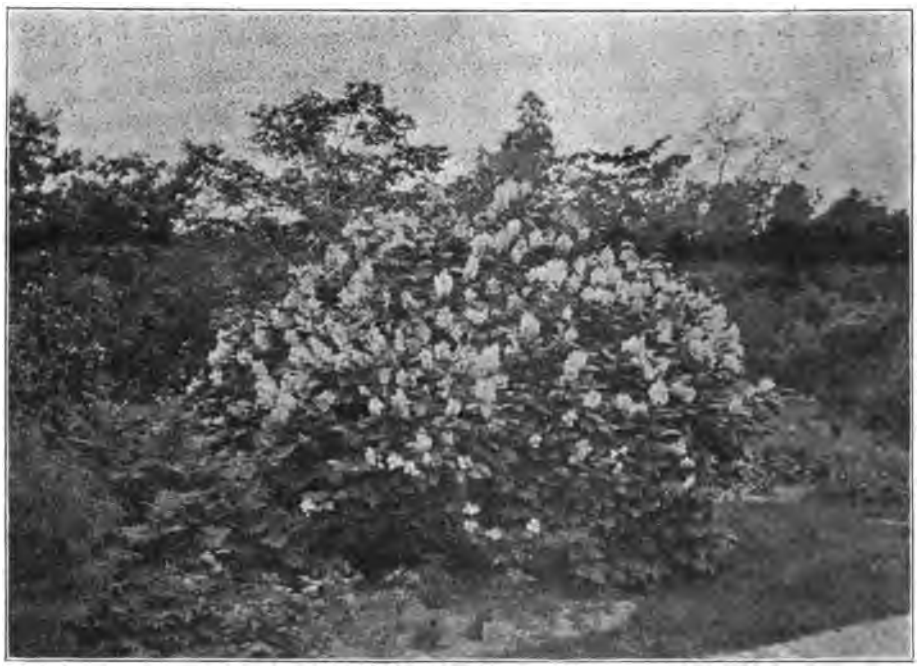
If we take a stroll along the lovely drives and walks of the famous Fairmount Park, Philadelphia, and especially by the Wissahickon, we can get no more forcible illustration of this thought.

It is to be doubted very much if before the land for this park was taken, there were more than a few hundred persons in Philadelphia who really supposed there was at command such a wealth of Nature's most costly gifts. But the land was condemned, and in course of time roads laid and paths made to interesting points, and thus were opened to thousands the opportunity for examining the beauties of Nature.

We may say, therefore, that the practical way to gain appreciation of the beauties of Nature, is to open up the natural gems so that they may be approached with comfort and please the eye.

J. F. M.,
Before the Penna. Hort. Soc'y.

THE BEST DECORATIVE PALMS.—Of palms used for massing in decorations, none are better, where tall ones are required, than the *Areca* and *Kentia*. They grow rapidly, and run up more slender than others, yet are quite graceful. Professional decorators admit this, and say further that the *Phoenix rupicola* is the most satisfactory where the plant is to be brought into frequent use. It stands handling much better. But it is not quite so pretty as the others. For single specimens, the *Latania* and *Livistona rotundifolia* are very desirable. Small plants of the graceful *Cocos Weddeliana* are always admired, and may be used in the foreground of a bank of palms.



SYRINGA VILLOSA. (SEE PAGE 121)

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NEW OR RARE PLANTS.

FLOWERING OF THE EREMURUS.—We have, in Hartford, a great many fine gardens, owned by friends of yours. One of the loveliest I have had the fortune to be in is that of Mr. N. F. Peck, at 31 Niles Street, where, this week, a grand flower was in bloom, such as has not been seen here, nor have I heard of otherwise, except in catalogues. It was the *Eremurus Himalaicus*, a tall lily from Turkestan and the Himalaya Mountains of India. A shaft of at least six feet bore, at its terminal, closely set flowers the size of a silver half dollar, with long stamens and anthers, very unique in appearance.

It must be a great pleasure to watch and note the gradual growth and bloom of such rare specimens by its owners, as we all know in a less degree of our own experience, from the interesting development of favorite new acquisitions in our gardens. Of other magnificent features seen in that garden, I must speak at some future time—such as the rare aquatics, the arbors and hedges of Crimson Rambler roses, and numerous other attractions.

Hartford, Conn. MRS. WILHEMINE SELIGER.

SYRINGA VILLOSA (see page 120).—Among hardy shrubs recently introduced to our gardens, one of the lilac family, *Syringa villosa*, commends itself by several meritorious features. The photograph is kindly presented by Mr. W. C. Egan, of Egandale, near Chicago. He well remarks "what a fine plant for a hedge where a space twelve feet wide could be devoted to it." The common lilac was a favorite with our grandmothers for forming an ornamental hedge,—and much of the pleasures of young city folk is in the prospective visit to some country garden, where the privilege can be enjoyed of plucking the lilac blossoms from some old farm-house lilac fence. The new species is a native of the north of China, and will no doubt prove hardy wherever the common lilac will grow.

THE HARDY FLOWER GARDEN.

CENTRANTHUS RUBER.—If not one of the showiest in flower, the Red Valerian, *Centranthus ruber*, is certainly one of the most desirable and interesting. Perennial plants that commence blooming in early summer and continue until late in the season, are not plentiful; but this answers that description, and is, besides, adaptable to poor soil and rockwork. In color, it is a dark red; the leaves a glossy green. The flowers individually are small, but are less insignificant than might be by being bunched. There is a white variety, also.

HARDY CACTUSES.—In rockwork, vases, on old walls, or near anything of a somewhat artificial character in gardening, few things are more effective than the hardy cactuses. Of the genus *Opuntia*, that class having broad, flat, thick "fronds," as the sections of the plant are usually termed, the one figured from

OPUNTIA RAFINESQUII.

Gardening Illustrated—Opuntia Rafinesquii—is the best known. It is the common hardy cactus of the Atlantic sea-board States, and is especially abundant in the sandy regions of New Jersey. In open sunny places it is a free bloomer, and the plants are almost hidden by the profusion of golden flowers. The blooming season lasts but about two weeks,—but the flowers attract wide attention while they last.

LESPEDEZA BICOLOR AND DESMODIUM PENDULIFLORUM.—In reference to the notes in the July issue, concerning *Desmodium* and *Lespedeza*, Mr. P. Ouwerkerk, Jersey City, N. J., points out the possibility of misunderstanding arising from the article named. It should be well known that there are two distinct plants, *Lespedeza bicolor* and *Desmodium penduliflorum*, and it is to be presumed that A. P. only had the one plant sent him under the two names. This conclusion may be readily reached from the fact that some nurserymen have had their plants wrongly labeled. Mr. Ouwerkerk says:—"The *Lespedeza* blooms

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more in the manner of the *Indigofera floribunda*, and is not as tender as the *Desmodium*, so that the branches often keep alive during a mild winter in Holland. The best use to make of the *Desmodium* is to plant it singly on a lawn, and tie the branches to a two-feet-long stake, above which the growth, three to four feet long, will droop, making the plant look like a large bouquet of purple-blue flowers. It is also very handsome planted on the borders between *Hydrangea paniculata grandiflora*, which blooms at the same time."

FRUITS AND VEGETABLES.

BUFFALO-BERRY—AN UNCOMMON FRUIT.—There are quite a few desirable fruits among our native plants, some of which are grown in considerable quantities in certain sections, but in the majority of places are totally neglected. One of these is the Buffalo-berry, *Shepherdia argentea*. It has the disadvantage of producing male and female flowers on different trees, so that several plants are needed to produce fruit, and one of these must be the male form. The fruit is well described in the report of the Minn. State Experiment Station, which says: "We have found the fruit to vary considerably in size, and also in the season of ripening, some of it being apparently ripe about the middle of August, and other trees producing fruit which would hold on into the winter. A peculiarity of this fruit is that frost seems to improve the quality of it much in the same way as frost affects the persimmon. The points which especially recommend this berry are its great hardiness, productiveness and reliability. The fruit makes an excellent sauce, and a jelly fully as good as currant. The plant is ornamental, and makes a pretty, dwarf hedge, standing pruning well."

GOOD CELERY.—It is surprising how large a proportion of market celery is of inferior quality. A first-class article has usually to be sought for in the garden of the amateur. Probably the reason given would be that the extra price required to pay for the extra labor in producing it, could rarely be obtained. The average buyer of celery does not know the difference between a good article and a poor one. When it comes to the table, it is not truly as bitter as gall,—but it is far too bitter for gastrical enjoyment. In the market garden, all sorts of schemes have to be followed to save labor in blanching the plant,—the art of removing the natural bitter quality. At times, the plants are set close together so as to partially shade one another, and finally boards are set up-right against the plant in the rows. At other times, albino varieties are employed, that seem blanched because they develop no green or chlorophyllous matter in their structure. But the bitter taste remains. A large proportion of celery that comes to table is untouched or wasted.

To have good celery, the process of earthing up must be continuous. It requires a very rich soil, and if plenty of water can be given, so much the better. If well managed, any variety can be brought to good results,—but, of course, there are varieties that give much more satisfaction than others.

LADY ELGIN STRAWBERRY. — Mr. S. L. Watkins, of Lotus, California, finds the Lady Elgin Strawberry early in that section, about as large as Sharpless in size, of a bright red color, and firm enough to endure shipping well.

FRUITING OF FIGS.—The Fig, *Ficus Carica*, has the male and female flowers on separate plants, just as the Osage Orange, Mulberry, and other plants of the same natural order have. The fruit, however, which is chiefly the enlarged and succulent calyxes of numerous flowers, reaches a considerable size, just as we see it in most gardens or places where a tree is growing alone. But when it has the advantage of pollen from the male trees, the fruit is very much larger and superior in every way. In the case of the fig of our gardens, the fleshy part we know as the fruit grows to a considerable size, and the seeds inside seem to perfect, but are incapable of germination, being but hollow shells. Where the fig is grown for drying, care is taken to have the advantage of pollinization, when they are much finer in every way than the ordinary garden fruit.

JAPANESE PLUMS IN PENNSYLVANIA.—The fruit growers of Southwestern Pennsylvania are unanimously agreed that the Japanese Plum is worthless for that section. The buds push

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too early in the spring, and are almost always frozen, resulting in no crop. This is discouraging; yet there may be a way of locating the trees on northern slopes where the buds would be more backward and less liable to injury. In other sections they are a perfect success, and frequently bear to such an extreme as to produce under-sized fruit and break down the branches. Of course, this is not permitted by the careful fruit-grower, who thins his fruit, increasing the size of the remaining ones and improving the flavor. But for flavor the old European varieties still lead.

PEACH GROWING.—Georgia has become the paradise of the peach grower. There are a number of large companies engaged in the business. Fifteen of the larger ones have altogether nearly two million of acres in peach trees,—to say nothing of smaller affairs, and the orchards of individuals.

IMPROVED FRUITS.—In the endeavor to improve fruits, it must not be forgotten that nature only permits variation up to a certain line. We shall never see a pear as big as a pumpkin, or a strawberry as large as a well-grown tomato. Thus far thou shalt go and go no further, is as true of variations as of the waves of the sea. To improve the pear, it is little use to sow seed of the Seckel if a good spicy flavor is desired, or of the Pound Pear if we desire large size. We must select some variety that already lacks some one point of excellence and improve on that.

THE CRAWFORD PEACHES.—From time to time new varieties of peaches are introduced that seem to compete bravely with the older varieties,—and, indeed, most of the older ones have had to surrender their laurels to the new-comers. There are, however, two that yet brave nobly the battle with the new-comers, namely, the Crawford Early, and Crawford Late. Those who raise peach trees, on a large scale, say that the demand for these two well-tried kinds, is about as large as ever.

ONION CULTURE.—In the onion, we desire to grow large bulbs and not large leaves,—hence the ground should be manured and another crop taken from it before the onion is planted. Before the onion is planted, the earth should be made as fine as possible. This encourages bulb growth. Even under the most intelligent supervision, there will at times be a tendency to make strong leaves instead of bulbs. To check this tendency, the onion-grower bends down the leaf growth just above the bulb, though, of course, not bending the bunch enough to break the leaves off.

SEED SOWING.—It should not be forgotten, in sowing vegetable seeds, and, for the matter of that, all seeds, that they must have air, moisture, and darkness, in order to sprout properly. If sown deeper than they desire, they rot; if too shallow, the light is too intense, or they do not get moisture enough. As a rule, they should be as near the surface as possible, with the rather dry earth packed around them as firm as possible. The surface earth should be rather dry, or it will not powder well,—and this is important in connection with air. There is no air in a soil pressed when wet,—but the more dry earth is pressed and pounded, the finer and more porous it becomes. There is a great art in getting seed to grow properly—and yet the art is very simple when the principles are understood.

SALSIFY.—The natural order of compositæ furnishes a goodly number of vegetables. Of the root-class the Salsify is a useful member,—though from ignorance of its requirements in the garden, and of its preparation in the kitchen, it is not in use as generally as it deserves to be. Its name, Salsify, is of Spanish origin, which would indicate that it was in use in Spain before its introduction among English-speaking people. The name cited is all it seems to be known by in the Old World. In America, it has come to be known as Oyster Plant, from a fancied resemblance in flavor to the familiar Shell-fish of that name. As usually served in modern cookery, this peculiar flavor is hidden by the applied surroundings. It takes effort to detect any oyster flavor as commonly served.

To grow it properly so as to have the flesh tender, and true to its American name, a dry soil must be carefully avoided. Its preference with us is for a substantial, loamy and very rich soil, and the seed should be among the earliest sown, as soon as the ground is dry enough after the frosts have departed. When

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growing, the plants should be thinned to at least six inches apart.

Cooking, one of the main elements in having on the table a first-class article, is a subject for another department,—but it may be stated here that, in the opinion of the writer, they need be not only boiled as parsnips are,—but the sections should be steeped in vinegar a few hours before being put on to boil.

Many persons enjoy it most chopped fine and made into fritters, as might be done with the true oysters.

TREES IN WET PLACES.—A correspondent who has been making an aquatic pond at Oberlin, Ohio, says :—"Last winter, on account of extreme cold and the encroachment of my water garden upon two fine, bearing apple and pear trees, they died. What ornamental trees could you recommend to replace them? Rapid growers and ornamental are desired. The *Liquidambar* grows with me."

The trees probably died from the backing up of the water, thus drowning the roots. Trees in swamps require air,—for while the main root goes down deep into the mud, the surface roots work among the moss at the top of the water. Where there is danger of the roots drowning, the rule is to plant above the surface. A bottomless barrel or box to hold the earth in which to plant has to be employed. Apples, pears, or anything will do well on swampy ground when so treated.

DIVIDING AND REPLANTING RHUBARB.—Large old roots of Rhubarb which have not been disturbed for years might with advantage be lifted, divided, and replanted. Secure several good crowns to each division, or divide a large clump into four. The spot selected for planting them must be well dug and heavily dressed with rich farmyard manure. Give a space of three feet between each division. Also mulch the surface with manure.—*Journal of Horticulture.*

FINE JAPANESE PERSIMMON.—A very fine specimen of the Japanese Persimmon, *Diospyros Kaki*, has been blooming for several years past on the grounds of the Friends' Meeting House, at Fourth and Green Streets, Philadelphia. It is estimated to be from 18 to 20 feet high, and the branches droop over the wall on the Green Street side. The persimmon family have many individual trees bi-sexual, though often isolated trees bear abundantly. This one has never been known to bear a fruit, but is very ornamental. It flowers later than the native persimmon. It was from a seed planted during the American Centennial.

CONCORD GRAPE IN PENNSYLVANIA.—According to reports made to the Pennsylvania State Horticultural Association, the Concord Grape yet leads all varieties in popularity. It has a flavor peculiarly its own; and when well-grown is exceedingly tempting.

THE BALDWIN APPLE.—From eastern orchards, the Baldwin holds a high place in the apple market. Though not of the highest flavor, it is above the average in this respect, and, as an all-round variety, it holds a high place on the fruit-grower's list.

YORK IMPERIAL APPLE.—One of the most famous Pennsylvania apples is York Imperial It is a winter apple, and an excellent keeper, making it a good market variety. It is of good size, irregular in outline, red on yellow ground rather concealed. Flesh yellowish, and very good eating.

FRUIT-GROWING IN CALIFORNIA.—The extent of the fruit-growing interest in California may be estimated from the fact that, at a recent convention in San José, no less than 800 active fruit growers were in attendance.

GRAVENSTEIN APPLE. — Mrs. Seliger says that Red Astrachan Apples are often labelled Gravenstein in the Hartford (Conn.) markets. The Red Astrachan is a Russian variety, and one of the best of its class, but will not compare with a Gravenstein in eating properties.

THE BEST NEW STRAWBERRIES FOR MICHIGAN. — The Michigan Agricultural Station says that the most promising of the newer strawberries are Excelsior, Flash, Lady Franklin, Nick Ohmer, Ponderosa, and Sample.

BISMARCK APPLE.—A fruit of the Bismarck Apple, grown by Mr. W. Turner, gardener to John Rockefeller, Tarrytown, New York, weighed fourteen ounces

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BIOGRAPHY AND LITERATURE.

YOUTHFUL DREAMS.

There is nothing can equal the tender hours,
  When life is first in bloom ;
When the heart, like a bee in a wild of flowers,
  Finds everywhere perfume ;
When the present is all, and it questions not
If those flowers shall pass away,
But, pleased with its own delightful lot,
  Dreams never of decay.—PERCIVAL.

DR. WM. BALDWIN.—In an early volume of MEEHANS' MONTHLY is given a brief note in reference to Dr. Baldwin, in which Dr. Gray is quoted as saying that only through his letters, as published by Dr. Darlington, very little would be known of him. He must have been an indefatigable collector aside from his high merits as an acute botanist. His specimens from the southern parts of our own territory and from South America, form one of the most valuable portions of the great herbarium of the Academy of Natural Sciences of Philadelphia. His last work was as surgeon and naturalist to Long's expedition to discover the sources of the Mississippi, and little is known of him in this connection than that he died on this trip at Franklin, Missouri, on September 1st, 1819.

The author of this paragraph has recently been looking among some botanical material covered by the dust of nearly a century. The plants of Lewis & Clark's expedition were discovered. Another interesting thing was the Journal of Dr. Baldwin. On reading, one cannot but be struck with the troubles and trials of an enthusiastic naturalist. Under date of July 7th, is the following entry :—

"July 7th. The mortification and chagrin in being thus disappointed from time to time in my expectations of doing anything worthy of notice in the expedition is inexpressible. Perhaps I do not support myself under it as I ought and may manifest a disposition too irritable, but when I reflect upon the period of life to which I have attained, the delicate state of health to which I am reduced, without the means of doing anything efficient (I fear) to restore it, the unfinished labors of eight years which would be almost entirely lost in case of my decease, and above all the rising family which looks to me for support, I cannot but feel conscious that those who best know me and my concerns will plead in my behalf. Still if I know the nature of my own heart, I bear no malice against any man, and if I have unjustly offended any one it has not been intentional. To that Being who, I have always believed, takes cognizance of the action of men, I humbly appeal for the truth of these observations. As for the others who make up the corps of naturalists, altho' they acknowledge their inability to do anything of importance, blessed with health and mostly in the vigor of youth, and pleased with travelling a great distance, they can restrain their feelings more, of course, than (without families) I can who have reached little beyond the sanguine romantic period of youth.

Had I received the slightest intimation that this preliminary expedition was merely to ascertain whether a steam-boat could ascend the Missouri, and that she would only stop to repair, surely no man in his senses would have embarked in her,—to waste his time in idleness, or in keeping a journal which can be of no real service. Under such circumstances all that can be entered in a journal with propriety must be derived from the transient glances we accidently have of seeing the shore in the immediate vicinity of the river, which must necessarily be very partial and defective."

On the 8th, one of the firemen had a cramp in the stomach, and it was thought proper to land,—so that the entries on the 9th and 10th are full of botanical information. On the 11th, however, they were on their way, and for that day is the following :—

"July 11th. Having completed repairs, moved again and came too late on the evening on the larboard side, opposite a steep bank up which I was hoisted, but it was too dark to find anything. It is a dark vegetable mould at least five feet in depth, judging from the perpendicular bank.

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Though Mr. L. exultingly observed that now I had exactly that botanizing ground I wished, bottom and bluff—a high calcareous bluff commencing a little above, but not being accustomed to botanizing by candle light as he would hunt deer or fish, this fine botanizing ground was lost to me. A few hundred yards above and in full view was a good landing near the foot of the Bluff! ! ! I am weary of these disgusting remarks, but the absurdity of continuing this hazardous expedition in a boat, which he has avowed will not answer the purpose intended, is so extraordinary that I cannot avoid speaking of it. Is the object solely for the purpose of having to say that he has ascended the Missouri higher than any other in a steamboat? Admitting that she did by hard pushing reach the Council Bluff, how is she to return to explore the Mississippi, which is now the scheme? The time that can be spared from blustering is joyfully spent in reading novels."

DR. BALDWIN.

On the 19th, they got hold of a copy of the *Mississippi Intelligencer*, in which it would seem Long's indifference to science was criticized. "Atkins, Jessup and Smith arrived by land." He seems to have had more encouragement after this, and especially after reaching Franklin on the 4th of August. But the entries for the 5th and 6th ends the journal. He was probably left there sick, for history tells us that he died there some three weeks following, on September 1st.

From what we learn of the man's home affections, it must have been a sad death, separated from wife, family and friends, by thousands of miles,—all a sacrifice for the advancement of science. The portrait from the earlier volume is again reproduced, as it will have more interest in connection with this new-found journal.

THE WINTER ACONITE.—Our well-known friend, the Winter Aconite, *Eranthis hyemalis*, as it has been known for nearly a hundred years, is in trouble. A scientific paper, just issued, says that the name must be changed to an old one discovered in Hill's "British Herbal," given to it about 150 years ago. Before garden-lovers change the name, it would be well to await for searches among some other musty old volumes, when further discoveries may be made. However, *Eranthis* is now so widely spread through the world, in thousands of gardens, that the labors of a few dust-covered botanists to inaugurate a change could not succeed. When a nurseryman has spent considerable time in advertising a plant under a given name,—especially for a life-time,—it

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becomes as so much cash. To change the name is a financial loss. He cannot be expected to make the sacrifice merely because some botanist forgot to search Hill's "Herbal."

After all, it is the botanist who suffers by these attempted changes more than the horticulturist. The latter feels the impossibility of success, and does not follow the lead. The botanist changes his herbarium names one day, and again the next. It is a case of cutting the nose to spite the face.

THE PINKSTERBLOEM.—In the July MONTHLY, Mr. Geo. D. Hulst states the Dutch "Pinxterblossom" to be the *Azalea nudiflora*.

Allow me to say that the Dutch name is *Pinksterbloem*, and Dr. H. Bos of the Agricultural Institute, Wageningen, (Holland), in his "Biography of Plants," calls it the *Cardamine pratensis*. H. J. VAN ANKUM.

Riverside, Conn.

Writing of the spring glory of New England woods, Mrs. Seliger, of Hartford, Connecticut, observes:—"Have you ever seen the glories of our New England woods when the pink azalea or honey-suckle is in bloom? It is worth going far to see, and the impressions of this sight will never fade from memory. I do not concur with the idea advanced that the *white* swamp honey-suckle, of which your June number brings such a beautiful picture, is the Pinxter-flower of the early Dutch settlers. To the contrary, it blooms too late to be available for the festival of *Pfingsten* or Pinxters, as the low Dutch people called it.

We have first in the reign the lovely little *Rhodora*, of purplish pink. It blooms when all the surrounding woods are yet bare of foliage.

The second to come of this class is the pink azalea or honey-suckle. Its stems are not in leaf when the flowers appear; but the woods are green, though not in full foliage which surround the lovely pink flowers generally in the middle to the end of May. I have yet a big jardinier full of them in my room this day, June 8th, and *Pfingsten*, or Whitsunday, has been more than a week ago.

The white swamp honey-suckle comes out in July, often lasts into August, when the foliage of its deep green shrubs is a glazed resemblance to evergreen leaves of the laurel. Our Dr. Russell, here, the oldest Park Commissioner and your friend, who passed his youth "Up Neck," as our North End, with its Ten-mile woods is called, would be the best authority in this matter from personal recollections. Will you try to gain that gentleman's opinion in this matter? It would be very valuable for future historical references."

The criticisms on the claims of the two species of azalea to the designation of Pinxterbloom, are welcome. It may seem a small matter to some, but many of the serious blunders in history come from indifference to accuracy in these small matters. It is from the small acorn that the great oak grows.

In regard to the great wood honey-suckle, *Azalea nudiflora*, the writer has noted the brilliancy of the flowers where the plants are growing in high altitudes, in rocky places, where, in the language of modern authors, there is a greater struggle for life. But this fact has been reduced to a general proposition by the writer, that brilliant coloring and this "struggle" are always coincident.

KNOWLEDGE.—London, edited by Richard & Proctor.—This English magazine is devoted to the spread of exact knowledge in popular language, and carries out well these good objects. Every branch of knowledge receives attention. During the few past issues have appeared a series of chapters on plants and their food, which, though strictly scientific, render the subject so plain as to be well understood by every lover of plants. The author, Prof. H. H. Pearson, shows that, though much is now known about the economy of vegetable life, much has yet to be discovered. There is still an unexplored field for the original investigator.

BOTANICAL NOMENCLATURE.—Our botanical works are praying for some new Adam to arrive who will give names to flowers that everyone will recognize. In regard to the scientific names, they thought they had it "down fine" when, in the time of Linnæus, they established a set of canons which every orthodox botanist, it was supposed, would obey. After a century of trial, it was found the laws agreed upon had not been observed. There has become a revolt, and a sort of go-as-you-please practice is prevailing. One author issues a book with one set of names, another a book with a different set for the same plants.—*New York Independent*.

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GENERAL NOTES.

CRIMSON RAMBLER ROSE. — A Rochester, New York, correspondent says that some of the original plants introduced, of the Crimson Rambler Rose, on the grounds of Mr. Geo. Ellwanger, of Ellwanger & Barry, have formed one of the most brilliant of floral spectacles the past season.

JUVENILE REFORMATORIES.—A correspondent of the Hartford *Times* does not like our modern juvenile reformatories. Children often become criminals because they have no outlet for doing what they like and what is proper for them to do. All children love to work in gardens; and if there were public gardens where children could voluntarily work if they wanted to, there would be no occasion to fill the reformatories to half their present extent.

None know better than those who have interested themselves in reformatories what are their weak points. However well treated, the inmates feel as prisoners, and there is the difficulty of placing them for a start in the world when the reformatory term expires,—a difficulty growing more serious every day. Aside from this is the enormous tax on the community in the way of private benevolence or public charges. None would welcome an improved method of lessening these pressures more than reformatory managers. Public gardens, as suggested, would help to some extent, —but they have not been found practicable in large cities from whence most of the population of the reformatories come.

LARGE DECIDUOUS CYPRESS.—The great Deciduous Cypress in Bartram Garden Park, at Philadelphia, now in decadence, reached a girth of 23 feet, about three feet from the ground. This has been regarded as a remarkable size. At a recent meeting of the Linnæan Society of London, the Hon. C. Ellis exhibited photographs of a *Taxodium distichum*, growing at Oaxaca, in Mexico, and of another gigantic tree, a native of Cambodia. The circumference of the former, at a height of three feet from the ground, was stated to be 143 feet, while the height was estimated to be not more than 100 feet. The native name for this tree is Sabino.

In relation to the early decadence of the celebrated specimen of Bartram's, it may be noted that one of the difficulties in the way of the much desired preservation of fine trees by taking the ground for public parks comes from the inability of city officials to know how to care for them. In Philadelphia, these parks are placed in the care of the Department of City Property,—a bureau established originally for the renting of wharves and market-houses, which cannot be expected to know much about the care of trees. With intelligent care, the Bartram Cypress could have been kept in good condition for another hundred years.

ORCHID FIBRE.—Orchids are famous for beauty and general attractiveness; but it is not generally known that they have a place in the arts that minister to the physical wants of man. But in some parts of the tropics, where orchids abound, a very delicate fibre is prepared by the natives, which they use in the preparation of the many ornaments these races prepare for trade with the paler races of men.

LAWS AGAINST WEEDS AND INSECTS.— For all the ineffectual efforts to keep out insects, fungi and weeds by law have been so freely shown to be supreme folly, Canada, as our readers know, prohibited the importation from the United States of nursery products in order to get immunity from the San Jose scale. At the time, MEEHANS' MONTHLY invited a smile at the law. These pests have numerous paths of travel without going through custom house gates, and it was predicted the San Jose scale would soon show itself to our friends over the border. Dr. Fletcher, a Canadian entomologist, has stated recently, that the San Jose scale has become the most serious pest that has ever occurred in Canadian orchards. But the law is still left as a scarecrow to the scale that is laughing literally "behind its back."

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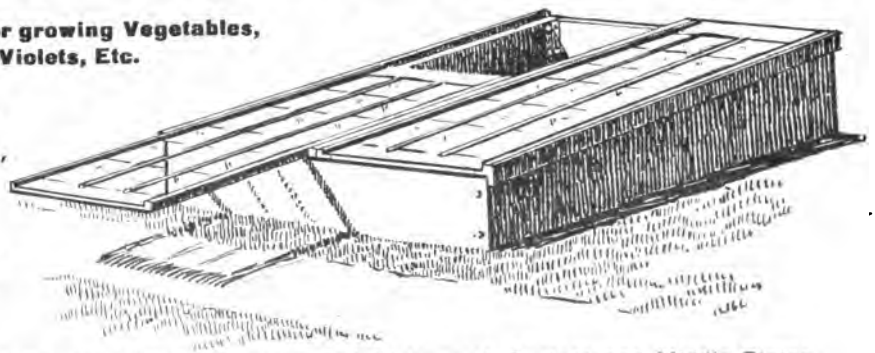

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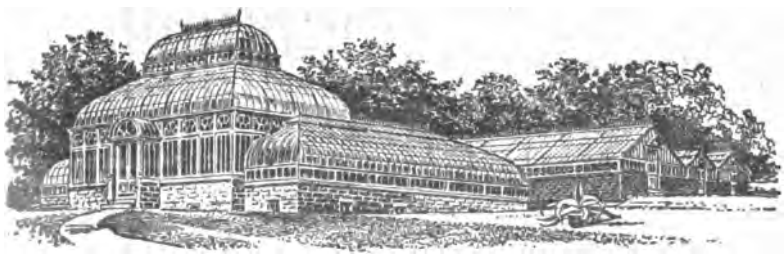

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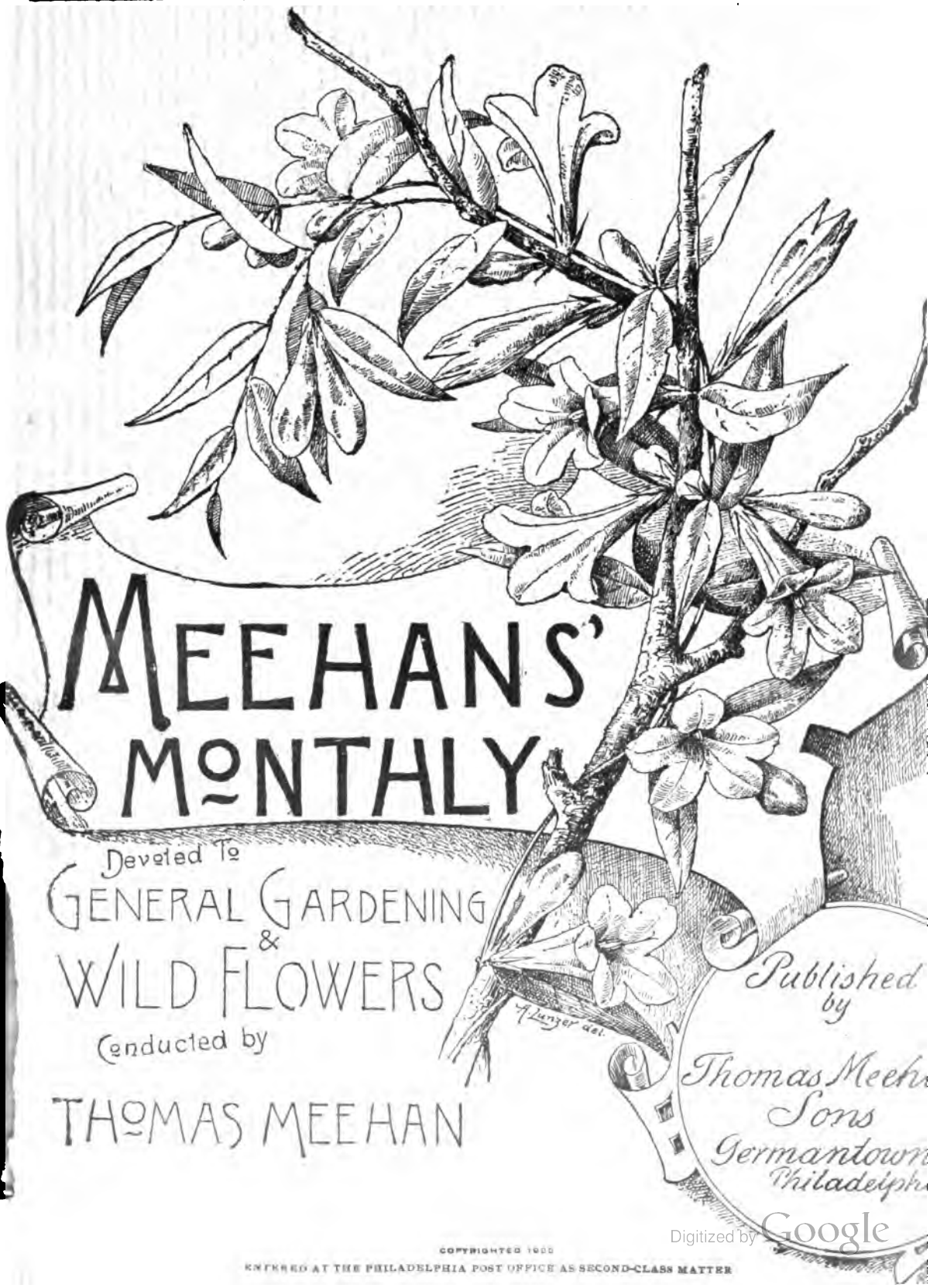

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Devoted To
GENERAL GARDENING
&
WILD FLOWERS

Conducted by

THOMAS MEEHAN

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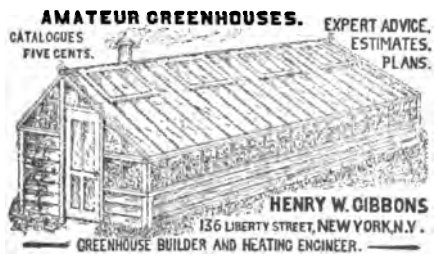

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GRINDELIA SQUARROSA.

GUM PLANT.

NATURAL ORDER, COMPOSITÆ.

GRINDELIA SQUARROSA, Dunal – Commonly only a foot or two high and branched from the base; leaves rigid, cauline, from spatulate- to linear-oblong, and with either broadish or narrowed half-clasping base, acutely and often spinulosely serrate or denticulate; sometimes radical and even cauline, laciniate-pinnatifid, involucre strongly squarrose with the spreading and recurving short-filiform tips of the bracts; outer akenes commonly (but not always) corky, thickened and with broad, truncate summit, those toward the centre narrower and thinner walled and with smaller areola. Gray's *Synoptical Flora of North America*. See also Britton and Brown's *Illustrated Flora of the Northern United States, Canada and the British Possessions.*

The very pretty and interesting plant here illustrated, a native of our territory that was once known as the Western Plains, affords, in its family history, a good lesson in nomenclature to the student in botany. Frequent changes of name are vexatious, but in many cases essential, if not always desirable. Here is a family of plants, now known as *Grindelia*, that not a hundred years ago was not distinguished from *Aster*, and the first one was described by Cavanilles about the incoming of the nineteenth century as *Aster glutinosus*, the species founded on specimens or seedling plants received from Mexico. Willdenow, following with his "Species Plantarum," transferred it from this to the old Linnæan genus, *Doronicum*, and it became *Doronicum glutinosum*, though he takes occasion to remark that it has a different appearance from the rest of that genus, especially in regard to the imbrication of the calyx, as the mass of involucral scales was termed in that day. In 1807, Willdenow, in a Berlin magazine, separated it again; made of it a special genus, and it became *Grindelia glutinosa*, so far retaining the family name. Coming to *Grindelia squarrosa*, of which this chapter treats, it was first discovered by the celebrated explorers, Lewis and Clark; and Robert Brown, seeing good generic characters not before observed, made for it a separate genus, *Donia*, and it appears in *Hortus Kewensis*, in 1813, as *Donia squarrosa*. Under this title it passed till 1836, when Dunal, in Decandolle's *Prodromus*, showed it to be not essentially different from *Grindelia*, the prior genus, and botanists have accepted it as *Grindelia squarrosa* since that date. We see from this history that changes are unavoidable. The discovery of new species, or of new forms of old species, shows characters, once thought important, to be in a measure trivial; or, on the other hand, strengthens those that may have been regarded of small account. The new names result from new discoveries.

It is to be regretted that the name *Donia*, established by Brown, and given to this plant as *Donia squarrosa*, by Pursh, when describing Lewis and Clark's plants in 1814, could not be retained, as commemorative of a very worthy man, George Don, a Scotch gardener, and subsequently a nurseryman at Forfar, in Scotland. Like many gardeners of the past age, he was very fond of botany, and had a pride in collecting living plants for the pleasure he derived from their study. His two sons, George and David, became famous botanical authors and teachers, David being widely esteemed as Professor of Botany in King's College, London.

As already noted, the specimen described by Pursh, was collected by Lewis and Clark, and is still preserved in the Academy of Natural Sciences, of Philadelphia. In Lewis' fine handwriting appears on the sheet "Prairies, in the camp near the old Maha village, August 17th, 1804." It may be noted here, that the dates marked on each paper of specimens do not always correspond with the dates in the itinerary of the journey, and are evidently the dates when the specimens were dry enough to

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put away. Lewis had evidently noted some distinction from ordinary plants, as "*Anonymous balsamifera*" was written on the label, and, following the above note appears, in Pursh's handwriting, *Demetria spathulata*, a provisional name he had to drop on his arrival in England on account of Brown's previous selection of *Donia*. The name *Demetria* seems to have been suggested by the clean, cut-away form of the young flower head, resembling a hemisphere.

Among the most fascinating of modern studies in plant life is the subject of variation. It has an intimate relation with the origin of species, which, as the modern thought runs, has been the result of great variation during the lapse of time. In this respect, *Grindelia squarrosa* is a very interesting plant, its range of variation being very wide. The description quoted from Dr. Gray notes that the leaves are acutely serrate—in our specimen the serratures are by no means sharp. He adds that they are often spinulosely serrate or denticulate; but the Pursh specimen before referred to is not merely spinulose, but has long ciliæ at the apex of the leaves. On the other extreme are specimens before the writer from the Seton River Mountains, that have very narrow leaves, and the margins almost entire. Generally, the herbarium specimens gathered by various collectors in different places, and showing variations in characters, are supposed to be typical of the whole series in the separate localities, and on this supposed fact has been constructed theories of local variations caused by supposed special local conditions. But the author, in studying the *Grindelia* in its haunts in Kansas and Colorado, has found the most extreme forms, in a comparatively limited area, by looking for them. The fact that, in geographical locations widely separated, differing forms prevail, must be accounted for in some other premise than environment. Isolated plants of this *Grindelia* are often found to have wandered from a distant home. One plant was found, several years ago, by C. D. Lippincott, at Swedesboro, N. J., and another plant was found by Isaac Burk on the ballast ground near Philadelphia. As heredity goes hand-in-hand with variation, it may easily be understood that the peculiar character of some supposed geographical variety may have been due to the character of the first immigrant settler, as much at least as to "conditions of environment."

Another interesting study of modern times is that of motion in plants. In many compositæ, the faces of the leaves, instead of the margins, are horizontal, and it has been supposed, in some instances, that the edges of the leaves range due north and south. These are known as compass plants. The author, in his earlier studies, was inclined to believe in the soundness of this view, but has had to abandon it on more extended observations. The earlier assent to the proposition can only be accounted for on the hypothesis that one can often see what is sought for. When told to see the compass plant, we believe we see it. It is now understood that the spiral direction of the growth-force, that in most plants does not manifest itself beyond the axis, extends in numerous composites to the ribs or veins of the leaves. It is these twists which set the leaves on edge, and the twist has, therefore, no relation to polarity. In some species of the family the twist occurs in the petiole near the junction with the stem, at other times near the middle of the leaf; and again, as in some Senecios and Centaureas, there may be two or even three coils twisting the leaf into a ringlet form. In *Grindelia squarrosa*, as we see by the picture, the twist occurs just below the middle of the leaf, and only the upper portion is vertical.

In naming the original plant *Donia viscosa*, Pursh had in view the extremely viscid secretion that covers the leaves to such an extent as to give them a singularly bright and glossy appearance. The purpose served by this gum in the economy of the plant has not been ascertained. In some of the species, the gum has been supposed to have strong medical virtues. It has given rise to its common name of Gum Plant.

Whether Grindel, in whose honor Willdenow now dedicated this beautiful American genus, did much service to the progress of botany, is not known. It was probably a personal compliment. About all the biographies say of him is that John Grindel was a Professor of Botany at Riga, and that he was born in 1776, and died in 1836.

EXPLANATION OF THE PLATE.—1. Lower section of a stem from a Kansan specimen. 2. Flowering branchlets. 3 Vertical section of a flower, showing the receptacle, with its spreading scales.

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WILD FLOWERS AND NATURE.

TALES OF THE WOODS.

"Of brown nuts crackling down from the bursting burs
In the autumnal days—of bowery vines
Festooned from branches of the oak and elm,
Of fragrant walnuts twined upon their sprays,
Of pines that gave a murmur like the sea,
Yet whisper of their distant mountain haunts,
And of all pleasant forest-sights and sounds—
Of greenwood-vistas, of the waterfall,
Where all the air is filled with rainbows—then
The plashing brook—the spotted thrush that sings
Deep in the glen."

HOWARD WORCESTER GILBERT.

HORNETS' NESTS AND PAPER FROM WOOD-PULP. — The wasp was the first manufacturer of paper from wood-pulp, and it began the business before man was created. Paper from wood-pulp has been made but a few years, and most any person of this generation can remember when it was not made. Such an old thing as paper made from rags, as it was, first began centuries ago, solely on account of printing purposes; and now there are more uses for paper for other purposes than printing, that we could not get along without paper. It is one of the wants of man as well as one of the luxuries. To be sure, in the backwoods or on some solitary Juan Fernandez island, paper would not cut any figure, but in civilized countries men must have it. I was sitting, resting my wearied muscles on a one-legged stool (I merely mention the one-legged stool to let your readers understand that I am not a member of any trust or combine and cannot afford to rest upon velvet and brocade cushions) near a gateway with unpainted posts of oak, when my attention was called to a wasp, the kind which is in the habit, like the hornet, of building paper nests. It was crawling or walking up the face of the post, then walking back. It seemed to be searching for something. Presently it exuded from its mouth, as it began the ascent again, a liquid, which it placed on the wood in a narrow streak about two inches long, then it backed down again and with its jaws began scraping up the softened wood, or what is called weather-worn wood, which it rolled up into a ball and then flew away with it to the nest it was building on some window or door-jam nearby. It might not be generally known that the mud-dauber wasps visit the water pools for water as well as mud. They carry both mud and water, to their nests, for building purposes. At other times these wasps will find water at one place, where there is no mud handy, and will carry it to a considerable distance, say to a dried-up pool, where they have been in the habit of obtaining their mud, and will moisten the dried mud, which they will roll up and carry away. I have known it for years that both the hornet and wasp obtain their building materials from the old weather-worn snake fences of chestnut rails which are so plentiful in the East. Here in this country, where there is no chestnut, they make use of the oak or pine fences, but any dead wood which is sound and free from bark is used by them. But water they must have if the wood is dry, and they carry the water to the wood. They do not do this carrying business all of the time, for when the wood is wet from the rains and dews, then is their favorite time for work at nest-building.

F. K. STEELE, Festus, Mo.

SPIRANTHES SIMPLEX, GRAY.—A number of years before this little plant, belonging to the Orchis family, was raised to a specific rank, it grew in a lane belonging to a farm in Conestoga Valley, Berks County, Pa. In September, 1884, it was detected growing among Haircap Moss (*Polytrichum commune*, Linn), in a sandy ravine in Manor Township, Lancaster County. Although bearing some resemblance to *Spiranthes gracilis*, Bigelow, it differs from it in having a solitary tuberous root and a smaller spike of pure white flowers, the lip being white. In 1889, I noticed, in Gray's Manual, that it was named *Spiranthes simplex*,

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Gray. In 1892, two specimens having roots were named and sent to one of our local botanists, who thus answered the sender, "*Spiranthes simplex*, Gray; this is a nice discovery. It is new both to the County and the State. I would like to retain the specimens. The plant should be in the State Home so that the finder would have the reward of his find." When Britton and Brown published their "Illustrated Botany of the Northern United States," they gave the plant to New Jersey and Maryland. I suppose it was not reported to them from Pennsylvania.

September 1, 1899, it was again found growing on a sandy part of the Welsh Mountain near Beartown, Lancaster County. If any of our local botanists, in their excursions, have found the plant, I would like to hear from them in the columns of your magazine. The plant, though small, has always been a favorite of mine. I used to think that it resembled a small blade of wet grass when the sun shines on it, and called it "Little Dewdrop." It is difficult to cultivate. I have planted a large number of them with very little success.

AMELIA F. EBY.

Lancaster, Pa., September 3, 1900.

GRINDELIA SQUARROSA.—In addition to the main chapter on *Grindelia* in this issue, it may be noted that the greatest number of species in found in Mexico. Some reach Chili on the South, and our species is the most Northerly species of the family. It is a great traveler, and has been collected from Western Canada to Texas, and though originally not found far east of the Rocky Mountains, has, during recent years, been traveling eastwardly at a rapid rate.

LIFE AND GROWTH IN PLANTS.—One of the commonest of cactuses in gardens is the *Echinopsis multiplex*, a small sub-globular species, with five or six sharp ribs, and sparsely sprinkled with a few clusters of long black spines on the sharp edges of the ribs. It sends up, occasionally, a large white tubular flower, which, like so many of the family, opens at night, and soon withers away. In Germany, a druggist, named Ludwig Rust, placed a specimen under a sealed glass case seven years ago, and it is said to be yet in a "thriving condition," to the surprise of the scientific men of Berlin, who are puzzled to know where it obtains its carbonic acid from. Many suggestions are advanced as to the source of this element. So far as the published account goes, however, there is no indication that the specimen was weighed before it was encased, or weighed after its seven years of entombment—no evidence, it may be said, that any carbonic acid was absorbed. It is just as likely to be a case of dormancy. It is now well understood that in the absence of exciting causes, dormancy in vegetation may be retained indefinitely.

MISTLETOE ON AN APRICOT.—The *Pacific Rural Press* figures a species of Mistletoe, native to California, that has grown on the branch of an apricot. It shows how plants can adapt themselves to new conditions, the home of the apricot being Asia. After all, these parasites, themselves, are good illustrations of this. These parasites probably started life in the earlier ages as other trees and plants do—and as the *Cuscuta*, or Dodder, does now—and eventually found it as well to live wholly on trees. Logically, a plant could not attach itself to a tree, until there was a tree to be attached to. Parasitism must then have been a later event in the great work of evolution.

METEOROLOGY AND VEGETATION.—The English peasantry, during past ages, have been fond of recording their observations in natural history by versification. In regard to prognostication of the weather, the lines read:

"When the oak is out before the ash,
Then 'twill be but a little splash;
When the ash is out before the oak,
Then the summer will be a soak."

We learn further by this that these plain people knew, long ago, that there was no regularity in the sequence of leafing or flowering. A plant, among the earliest in this respect one season, may be a laggard in another. And yet to-day many of our learned fellows are constructing floral calendars by noting the times when floral activity appears.

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GENERAL GARDENING.

AUTUMN FRUITS.

Full slow to part with her best gifts is Fate;
The choicest fruitage comes not with the Spring,
But still for Summer's mellowing touch must wait,—
For storms and tears, which season'd excellence bring,
And Love doth fix its joyfullest estate
In hearts that have been hushed 'neath sorrow's brooding wing.

FLORENCE EARLE COATES.

DISEASE IN BIRCH TREES.—A Buffalo correspondent, interested in the note on the birch disease, in a recent issue of MEEHANS' MONTHLY, sent to a leading horticulturist in New York an inquiry, and received the following reply:

"I am very sorry to say I cannot give you any definite information about the trouble with the White Birch. I have noticed the same difficulty in *many places*, but so far as I am aware, no one is quite sure what the cause is. I am very certain that the dying of the birches occurs *where there are no borers*. I have thought sometimes that it was due to the natural death of the tree when it reaches its full longevity. On the other hand, I have seen some trees die which appeared still to be in vigorous growth. The thing I have always recommended is to cut back the tree heavily, below the diseased parts, in the hope that new wood might arise and the tree outgrow the difficulty. I should also apply a little commercial fertilizer to the tree."

It so happens that, when the first specimen of a diseased birch was brought to the attention of the writer, he at once perceived the analogy between the effect, and that produced by a ferment fungus on the Japanese Ivy, apple, pear, quince and so forth; but when this opinion was expressed, he was silenced by receiving specimens of birch branches bored to a mere shell. He adopted the borer idea without further thoughts of the matter. Since receiving this communication, he has made a more thorough examination, and now suspects that it is the work of a ferment fungus, just as in the "Fire Blight," "Frozen-sap Blight" and similar manifestations in other trees. The spores obtain an entrance in some local spot, and there germinate, destroying the tissue rapidly for many inches. The fermenting sap is carried up through all the portions of the tree above the local point of attack, poisoning as it goes. In the birch, as in other trees, this view seemed verified by one with a penknife, shaving the bark from the local point of attack upwardly.

It is possible that a practised eye, going carefully over a tree trunk in early spring, penknife in hand, might discover the local attack, and by cutting all out to the healthy bark, and washing with a copper solution, save from further progress—but people are so unaccustomed to look in advance for hidden trouble with trees, that one might almost say there is no practical remedy. As with the "Fire Blight," these troubles usually wear themselves out. It is by no means certain, however, that this is the cause.

TWO SATISFACTORY HOUSE AND DECORATIVE PLANTS.—Foliage plants that may be considered all-around satisfactory for house and general use in decorations are really very scarce. Where the best of care is given them, quite a list might be made; but quite naturally, in the majority of cases, the care of such plants is very irregular, and under adverse heating and ventilating conditions they suffer more or less. No better plants, at the same time very ornamental, can be named than *Asparagus Sprengeri* and the Boston Fern, *Nephrolepis exaltata Bostoniensis*. Very large specimens of either are remarkably handsome, and show off particularly well if grown in large baskets or placed on pedestals where the graceful stems may show off to greatest effect. Then, too, they come in useful for other purposes, as the stems may be cut and worked into bouquets of flowers very effectively.

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ENGLISH BIRD CHERRY.–To those who admire beautiful trees, it is a surprise that the English Bird Cherry is not planted more frequently. It has special beauty at all seasons. The habit of the tree is rather that of a gigantic shrub, as it is fond of sending out branches from the base of the main trunk near the ground, which soon compete for leadership with the main trunk. Those who desire to have a clean, straight bole, keep these cut away. It then makes a tree of 25 or 30 feet high. But when these basal shoots are left to grow, it assumes a pretty, regular growth, as seen in the annexed illustration. In early spring it is clothed with drooping cylindrical racemes of white flowers, followed in summer by large, shining black berries, so attractive to birds, that the name Bird Cherry was probably derived from it. Finally, in our country at least, the leaves turn to a rich brown color, very unusual in European trees.

CERASUS PADUS. ENGLISH BIRD CHERRY.

The specimen illustrated is growing on the grounds of Mrs. Theodore Presser, in Germantown, Philadelphia. On the left is seen a specimen of what the German and French nurseries send out as *Catalpa Bungei*, which has no close relation to that Japanese species, but is a dwarf form of our common American Catalpa grafted on the tall stem of the normal form. The name cannot, however, be changed, since it has become so widely distributed. The specimen on these grounds is regarded as remarkably fine.

SCHOOL GARDENS.–In the MONTHLY for July, 1900, was a very suggestive article on School Gardens, and it makes one's heart ache to know the benefit to be derived from such work as pursued and recommended by R. Bingham, but not universally adopted. Botany, as has well been called, is, indeed, the "amiable science." In it are found at once the useful and agreeable. And nothing can seem sweeter than that children, who universally are attracted even to a flowering weed, should have this necessary instruction to go with them through life, as not only a pleasant memory, but also a daily blessing. When so much time is consumed over work of little value, it would be so delightful to find some passing moments filled with an interest and a knowledge of common things. The different trees of their native forest, the seeds they produce, the birds that build their nests in them. The inhabitants of the bright oak apples or excrescences, a whole world full of wonder and

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beauty, but the mind untaught, the eye to see, becomes neglectful of these every-day beauties, and companionship is sought instead in artificial and sometimes harmful pleasure. The mind preoccupied with the wealth that Nature offers in garden, field, and forest, would it not rise higher and higher to adore the author of so much that is wonderful, beautiful, useful?

MRS. E. E. ORCUTT.

THE EUROPEAN LARCH.—The annexed illustration of an European Larch is taken from a tree growing on the Chew grounds, the famous turning point in the battle of Germantown, when Washington moved to retake Philadelphia from the British General Howe. A glance at the picture is sufficient to inspire one with its beauty. Though a deciduous tree, it is one of the Coniferous family, though its slender, graceful branchlets would seem to dispute the fact. The flowers, ultimately becoming small cones, appear very early in Spring. They are of a deep purple tint, and give the tree as gay an appearance as many trees that are classed especially among flowering plants.

EUROPEAN LARCH.

SEEDLINGS DAMPING OFF.—Raisers of flower seeds or of cuttings well know the trouble from a fungus attack, which rots away the young plants. In many cases, hundreds are lost in a single day or night. Mr. Worthington G. Smith, one of the most practical of English mycologists, explains, in the London *Gardeners' Chronicle*, that this is the work of a microscopic fungus of the genus *Pythium*, and gives the following account of the process:

"It has thick-coated resting spores, which, judging from the frequent damping-off amongst seedlings, must be abundant in all gardens or wherever plants are growing. These spores germinate in damp, badly ventilated places, especially where moderately warm; in all plant-houses they must be continually germinating. The fungus can maintain itself on decaying vegetable matter, such as is abundant in all rich soils; if, however, it comes in contact with living plants in a tender condition, with the outer skin, as it is in seedlings, still unhardened, then it attacks the plant and gets inside it, attracted by the nutritious substances present there. Thus it comes that *Pythium* appears first at the neck of the plant on the ground level. The seedling is soon girdled, and the upper parts deprived of nourishment, then droop; the soft, rotting neck can no longer support the stem upright, so it topples over, and is soon covered with the damping-off fungus and various other moulds."

KILLING WEEDS.—It is amusing to read the learned articles prepared by those of little experience about the appearance of this or that ter-

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rible new weed, and of the special means to be employed with every different species. They remind us of the famous recipe for killing fleas, namely, to place them between the two thumb nails and crush them. The practical cultivator seldom cares to know even the name of a weed. He knows that if he keeps the cultivator or the hoe going as it should go, during the growing season, there will be an end of the most pernicious plant. No plant can live if prevented from making full-grown leaves for a single season.

ren rocks, and it does not flower much under a couple of score of years. Indeed, it is only of the male trees that nausea is experienced. The female has less odor,—and, indeed, if it equalled the male, it would be worth enduring by reason of the glorious beauty of the tree when ripening its winged seeds in the fall. It may be noted here that the name was written by the botanist who described it, as *Ailanthus*, evidently by a slip of the pen, as it is meaningless, while he stated, at the same time, that he derived it from the Malayan common name of

A MASS OF AILANTUS GLANDULOSA.

THE AILANTUS IN LANDSCAPE GARDENING.—The Ailantus has two disagreeable features. It is liable to throw up suckers innumerable, and, for a few days, while the male flowers are open, the odor to many persons is annoying. But it has so many points of interest that it cannot be wholly overlooked in landscape gardening. Along the rocky banks of the Wissahickon, and doubtless in many other places in our country, it has become wild, and adds materially to the beauty of isolated masses of vegetation. The annexed illustration is from a photograph of one of these views. The suckering is of no account among these bar-

the tree *ailañto*, which signifies "tree of heaven," in allusion to its rapid growth skyward, and the name should, therefore, be *Ailantus*. It is one of the healthiest of trees in crowded cities.

UNCOMMON FORCING PLANTS.—One of the choicest forcing plants is *Doronicum plantagineum excelsum*, a very large-flowered, yellow composite. Unlike most yellow composites, it is early blooming and dwarf, the flowers frequently measuring five inches across. There is nothing coarse about the flowers, which have long, slender, numerous petals. Flower

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buds show amongst the leaves about four inches above the ground; the stem elongates and the flower opens when about six inches height is reached. The stem continues to elongate and the flower increases in size, until the stem is about two feet high, when the flower fades away to be replaced by another below it. The flowering period is in this manner continued for about two months. The flowers last well cut.

ENGLISH BEECH.—All know the beech by its smooth bark, which never has a rough edge, and by its leathery leaves, always smooth and shining. Few trees are more striking when it has room to develop itself. The annexed illustration is from a tree on the old battle ground of Germantown, and has been planted about thirty-five years.

ENGLISH BEECH.

GALAX LEAVES.—It is conceded by florists that no more useful decorative material has been found than the Southern Galax leaves. These comparatively small round leaves, of a brilliant green and bronze color, are very tough and lasting, and are made into leaves or used in bunches as the nature of the decoration may require. They are even used to encircle bunches of violets.

POINSETTIAS FOR CHRISTMAS DECORATIONS.—The Poinsettia is a very popular plant for use in decorations about Christmas time, and when well-grown is certainly very effective. There is what is termed a double variety, having an extra supply of the scarlet bracts usually looked upon as petals, which is very desirable, being a little showier and more lasting. Branches with these bracts may be cut and used as desired, or the entire plant. They will not stand the cold very well, the leaves dropping at a fall in temperature, but the bracts remaining on till the last.

LESPEDEZA BICOLOR AND DESMODIUM PENDULIFLORUM.—As Mr. Ouwerkerk says, in the August MONTHLY, the two are very distinct in habit and time of flowering, and could not easily be sent out for the same thing. The first being a hardy, straggling shrub, flowering here July 10th, while the *Desmodium* makes an annual growth from the root-stock, and flowers about September 10th.

J. HOLLOWAY.

Dosoris Park, Glen Cove, N. Y., August 4th.

It is well understood that there are two distinct plants under the separate names, but the names became confused. *Desmodium penduliflorum* got to be the widely distributed name for what is really *Lespedeza bicolor*. Efforts to transfer to each its correct name have been unavailing.

REPLANTING FOREST TREES.—The future of walnut timber has been provided for in Kansas, by extensive planting. This foresight has not been in evidence in the eastern section of our country. It is now said, however, that the Potts family, at Nantmeal, in Eastern Pennsylvania, have set out thirty acres of Black Walnut trees. This tree has an advantage in bringing in revenue by its nuts long before being of value for its timber.

RANUNCULUS REPENS Fl. Pl.—A double-flowered buttercup may suggest itself to many persons chiefly in the light of an oddity; yet it is more than that. The flowers are fairly abundant, and are so borne as to be useful for cutting. The foliage is a dark, shining green.

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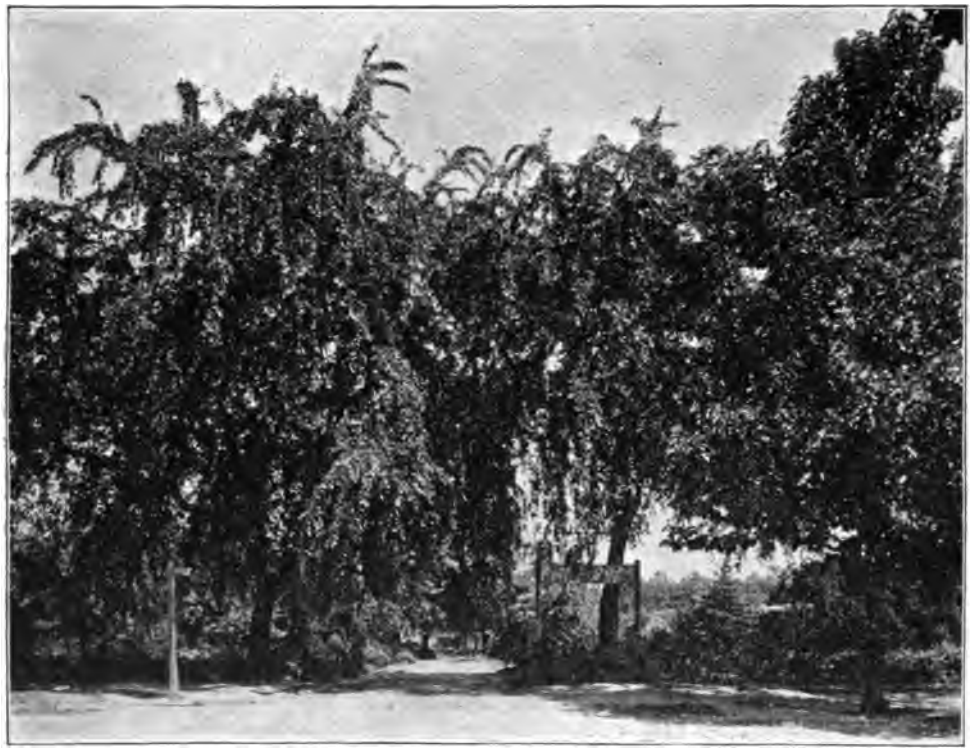
NEW OR RARE PLANTS.

GALENA WEEPING ELM.—The American White Elm, *Ulmus Americana*, often takes on a semi-pendulous. graceful habit, on which account, joined with a comparatively rapid growth, it is a favorite with planters. It does better in cities for streets and small parks than many other trees. The variety here illustrated is a very strong grower, with the branches curving downwards much as a weeping willow, which in habit indeed it much resembles. It



WEEPING ELMS. AT ENTRANCE TO MEEHANS' NURSERIES.

was found wild near Galena, the home of General Grant, in Illinois, by a citizen of that place named Beebe, about 30 years ago. The illustration represents a pair of about that age, from the grafts sent by Mr. Beebe, at the entrance to the Meehan Nurseries. It was supposed when first distributed to be a variety of the *Ulmus fulva*, but proved on flowering to be as above described. The two specimens, drooping nearly to the ground, are remarkably beautiful, and well suited to their position at the entrance; but they would make equally desirable lawn specimens.

THE HARDY FLOWER GARDEN.

WINTER PROTECTION OF TRITOMAS.—It was only within recent years that the tritoma, popularly known as Red-hot-poker plant, was demonstrated to be fairly hardy in the North. Blooming so late in the season, it is a valuable plant in the flower garden, and worthy of considerable attention.

Plants that are set out this Fall should be well protected the first winter by a good mulch of leaves. This material is better than manure for plants inclined to succulency, excessive moisture in winter being undesirable.

IMPROVED PÆONIES.—Mr. H. A. Terry, of Crescent City, Iowa, has devoted a number of years to the improvement of this lovely genus of hardy herbaceous plants. After discarding numbers of the more inferior seedlings, he has a list of ninety-four named varieties. It is probably one of the finest collections in the world.

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FRUITS AND VEGETABLES.

GRAPES IN MINNESOTA.—Prof. Greene, of the Minn. State Experiment Station, has the following to say of grapes in that State :

"This year Campbell's Early fruited for the first time, and appears to be a very promising variety. Beta is a very hardy variety, which originated at Waconia, and which for many years has been grown in a small way in that section, and found to be exceedingly hardy, and able to stand fully exposed through some of our most severe winters." Worden, Moore's Early and Agawam are also mentioned as being satisfactory.

PEACH TREE DISEASE.—A Harrisburg correspondent says :

"Along the foot of the South Mountain, the eastern boundary of Franklin County, and extending into Washington County, Md., there are large peach orchards. As might be expected, 'yellows' have been injuring the trees, and in some places has ruined large plantations. There is a picnic ground, Pen Mar, near the top of the mountain, and it is said to have an elevation of 1700 feet above tide water. Along the face of the hill where the picnic ground is located there has been growing, for some seven or more years, a number of peach trees, bearing fruit and free from all leaf-curl or 'yellows.' This ground is about 700 feet above the peach orchards of the valley. It has occurred to me that this may be the cause of their being free from the 'yellows' and leaf-curl. Will you, if not too much engaged, give me your idea on this point? Could it be due to the altitude that these trees are so fresh and free from disease?"

There is no mystery now as to cause of "yellows" in the peach. A parasitic fungus, the spawn of *Agaricus melleus*, feeds on the roots, causing a fermentation of the sap, which, of course, is carried up with the sap and permeates every part of the tree. This *Agaric* gets its start on dead or diseased roots, but soon transfers its work to healthy ones when it gets a chance.

Like all members of the cryptogamic family,—the ordinary mushroom, for example,—it requires nice conditions of air, moisture, temperature and food, to grow vigorously. It is just possible that it would grow with more difficulty in a high altitude than in a lower one; but there are too few facts on record to give a positive opinion on this point.

So far as known there has been no note made of the existence of this root parasite in California. It must have been carried there with some kinds of trees, for it is by no means confined to the peach. This is possibly owing to the conditions in California being unfavorable to its rapid development. It is said there are also localities in the Eastern States where the fungus is not found, and the peach free from disease.

The parasite is particularly partial to old peach stones. In some nurseries it is the practice to bed peach pits and take out the sprouting plants for setting out in the nurseries. Often a quantity will not sprout till the following season. To save these, additional stones are placed in the same old bed, and the root parasite is distributed along with the trees. Careful nurserymen make new beds for their peach stones every year.

The leaf-curl is also the work of a parasitic fungus that attacks the leaf from the outside.

THE OSAGE ORANGE AS A FRUIT.—A correspondent of the London *Journal of Horticulture* brought to England an Osage Orange apple from St. Louis, in 1880. "It had a delicious scent, but was quite uneatable." But this year he got "in the market of Algiers a fruit which I fancied must be an Osage Orange, though the rind of the fruit was smoother than the one we brought from America."

This Algerine production was evidently the Pomelo, as figured and described in the March number of MEEHANS' MONTHLY.

The Editor of the *Journal of Horticulture* adds the following :

"Some years ago a proposal, if not an attempt, seems to have been made to cultivate the tree for its fruit in this country, a rather curious notion, as it is not conceivable that anyone would eat the fruits if they were produced, for, though they are not unpleasantly perfumed, there is no evidence that the native North American Indians ate them. They smeared their spears with the juice before going to war, and made bows, if not arrows, of the wood for shooting their enemies, and hence the tree is popularly called 'bow-wood.'"

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Attention is called to this paragraph here in order to ascertain if any one knew just what use has been made of the Osage Orange in America in an edible character.

When the writer of this was a student in Kew over fifty years ago, a small barrel of Osage apples was received,—the writer assisting in opening the barrel. The fragrance was delightful. At that time Sir William Hooker and the young Queen Victoria were passing and were attracted by the sweet odor. Sir William, in his usual pleasant manner, explained what he knew about them,—that they were closely related to mulberry and were good to eat, as the Indians ate them. The Queen slightly bit one, and then with a suspicious smile, remarked, "Sir William?" In a good humored way he responded that he had been credibly informed that the American Indians ate them, but he supposed some method of cooking must have been employed. But ever since this hint, in the long-ago times, the writer has found no confirmatory proof of this.

The only fact bearing on their actual use came to hand after the war for the Union. The firm had been largely engaged in raising the Osage Orange for hedges. When the war broke out no more seed could be had from the South. At the close, after four years, a promise was made by a Southern gentleman to collect for them; but he was obliged to apologize for the failure in the autumn by the plea that the Osage apples had all been collected and eaten by the freed negro slaves. In some way they must have been in use as food.

CRAWFORD'S EARLY PEACH.

PEACH, CRAWFORD'S EARLY.—Among the many newer candidates for public favor, Crawford's Early Peach still retains an honored place. It was raised in New Jersey by William Crawford, of Middletown, over a half century ago, and is valued as among the first of the early peaches to attain a respectable size. The early peaches are usually small. It is not of highest character as compared with others, but yet it may be rated as little inferior to the best. Its hardy, healthy and good-bearing qualities recommend it highly, and to the market man it appeals by its firmness, which enables it to be carried to market well. It is a yellow-flesh free-stone and prettily colored in the centre.

PRINCIPLES OF STRAWBERRY CULTURE.—The finest strawberries (as with all fruits) are produced from vigorous plants; therefore the plants must be set out in such manner and cared for to encourage a strong condition. Single plants or hills will naturally be stronger than plants permitted to make runners and a matted bed. Large, heavy, dark green leaves are usually an indication of vigor and will accompany a fine yield of fruit. Plants grown in matted beds are likely to be later in ripening than those in rows or hills, and will do poorly in fewer years. A good application of manure in the fall and a mulching of clean straw is beneficial. By spring the straw will be mostly well settled among the plants and furnish a clean carpet to the ground and keep the fruit off the soil. The rows should be renewed with good strong plants at the first sign of weakening, which may occur after from two to four years.

NECTARINE FROM THE PEACH.—A Cecil County, Maryland, correspondent sends us the following:

"Pierce Brothers, tobacconists, Virginia Avenue and First Street, have growing in the

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yard adjoining their store a very peculiar fruit, the name of which does not seem to be known. The tree is a volunteer and resembles that of a peach in its leaf, growth and habits. The fruit, however, is decidedly like a gage in shape, with a tough semi-transparent skin like an apple, green on one side and brown on the other. The seed of this peculiar fruit is exactly like a peach seed and does not adhere to the meat of the fruit. The flavor is that of a peach, but much richer and more delicious. Is it a distinct variety of fruit or a combination brought about by fertilization?"

The fruit sent is simply a peach that has lost its furry coat. It is known in gardening as the nectarine. The original nectarine is recorded as a branch from an ordinary peach tree; but though not common, seedlings from the peach sometimes produce the nectarine fruit, as this has shown it can do.

JUNEBERRIES.—The fruit of the *Amelanchier* has an odd but agreeable flavor, and is cultivated to some extent—doubtless less than it should be. As a rule, plants are set out for the beauty of their flowers, which are produced in great abundance in early spring. There have been attempts at improvement of the fruit, one variety being known as "Success." The report of the Minn. State Experiment Station says of this variety: "It is well worth growing, for it is perfectly hardy, very productive, and the fruit is desirable." Mr. W. F. Bassett, Hammonton, N. J., writes that he has a variety superior to Success, which ripens somewhat later, bushes one to two feet in height being loaded with good-sized berries.

APPLES AND PEACHES FOR SOUTHWESTERN PENNSYLVANIA.—The following apples and peaches are most highly recommended for cultivation in southwestern Pennsylvania:

Apples—Baldwin, Grimes' Golden, Rome Beauty and Winter Rambo. Peaches—Old mixon, Amsden's June and Beer's Smock. The latter is classed in Thomas' "Fruit-Culturist" as identical with Smock Freestone; but nurserymen can show two slightly different fruits, and their claims are backed by the "Catalogue of Fruits" issued by the American Pomological Society. Both are excellent, late varieties.

THE MOUNTAIN ROSE PEACH.—It was recently noted that, for all the many good market peaches introduced during recent years, the two Crawfords—Crawford's Early and Crawford's Late—held their own as special favorites with peach growers over a wide stretch of territory. A correspondent suggests that the Mountain Rose may be added to the list of those that are yet still highly prized by market peach growers.

APPLE, GIDEON.—Minnesota has a hard time in getting hardy apples. The climate is not well suited to the varieties common to our orchards. Attempts to improve on the Russian species, of which the Siberian Crab is a representative, have met with good success. The Gideon is said to be a great advance. The crab strain is not usually of high flavor; but the Gideon is represented as a fine eating apple. In appearance it resembles the Yellow Bellefleur.

WINTER CABBAGE.—Cabbage is easily kept all winter by being buried in the ground head downward. Select the most firm heads, cut off the root smoothly and pack them in piles much as apples, turnips or similar things are treated. When removed, a few leaves may be found spoiled, and it will be necessary to thoroughly cleanse the whole head, tearing off each leaf before boiling the head, as a small brown worm, easily detected, is liable to work its way in amongst the leaves. The flavor is perhaps not quite as fine as when the heads are fresh, but the lover of cabbage will readily excuse this in order to get a right good dish at such a season.

THE COLUMBUS GOOSEBERRY.—It is often a matter for regret that the large English Gooseberries do so poorly in the United States, the foliage mildewing badly, and weakening the whole plant. This trouble is, however, overcome by the use of powdered lime sprinkled on the foliage. The variety tested is the well-known Industry. Another variety for which American parentage is claimed, at least in part, and which seems to do much better, is the Columbus. The fruit produced has the same heavy skin, and is twice the size of ordinary berries. They are perhaps a little less tart, but are nevertheless excellent for preserving and use in pies.

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BIOGRAPHY AND LITERATURE.

LIFE'S OCTOBER.

Oh, hearken, hearken ! through the afternoon,
The grey tower sings a strange old tinkling tune,
Sweet, sweet, and sad the toiling year's last breath,
Too satiate of life to strive with death.
And we, too—will it not be soft and kind,
That rest from life, from patience, and from pain,
That rest from bliss we know not when we find,
That rest from love that ne'er the end can gain?
Hark, how the tune swells, that erewhile did wane!
Look up, love—ah, cling close and never move!
How can I have enough of life and love?

WILLIAM MORRIS.

PHOTOGRAPHING FLOWERS AND TREES.—All amateur photographers and those, also, who may be considered beyond the amateur point, will find the April number of *The Photo-Miniature* very helpful in the study of plant photography. The subject is taken up exhaustively and the details of execution very clearly expressed. There are so many good points, it is impossible to give our readers much idea of them in this space; but among them is observed the recommendation of Orthochromatic plates for plant photography in general—Isochromatic plates being the best for yellow flowers. This latter is important, as so many desirable flowers are yellow. This excellent pocket-size magazine is published by Tennant & Ward, 289 Fourth Avenue, New York City.

WILLIAM SAUNDERS.—Few of the eminent lights in American gardening were better known than William Saunders, Chief of the Experiment Grounds of the U. S. Department of Agriculture at Washington—a position he held ever since the Department was organized. His death is announced as having occurred September 12th. He was born at St. Andrew's, in Scotland, on the 7th of December, 1822. A full sketch of his life and services is given, with a portrait, on page 15 of MEEHANS' MONTHLY of the Vol. for 1899. As the designer of the famous grounds of the Gettysburg National Cemetery, aside from other eminent services, his death ranks as a national loss.

HORTICULTURAL HALL, FAIRMOUNT PARK.—Mr. Thomas Mingey, a Kew graduate, for many years gardener in charge of Horticultural Hall, Fairmount Park, Philadelphia, has resigned his position.

ZOE.—The botanical magazine issued as *Zoe*, the publication of which was held back with its fourth volume, has again appeared under the editorship of Mrs. Katharine Brandegee. It keeps the active botanist informed of many matters of interest connected with the flora of the Pacific coast. It is published at San Diego, California.

CHANGE OF NAME FOR THE WINTER ACONITE.—Referring to your note on the change of name in *Eranthis*, in the August MEEHANS', I would say that it hardly seems likely that any great number of botanists will accept changes in the names of plants based upon the authority of "Hill's British Herbal." It has been my fortune to own two copies of this rare volume, and I can say that the book itself bears indubitable evidence that it was written without the slightest reference to the Linnæan idea of giving one specific and one generic name to each plant. Usually there is a string of Latin adjectives to characterize a species, and when there is but one, it is by accident and not intention. No botanist would think of changing the specific name of a plant when it does not agree with the first adjective in Hill's description, and if we cannot accept his authority for species, why do so for genera?

W. N. C.

That the change would probably have to be made was suggested by a leading botanist, who is regarded as of high authority in such matters.

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CHAS. H. BRECK.—Horticulture in America owes largely to Joseph Breck, of Boston. His works on gardening, at the beginning of the last century, were long the standard of reference, and, indeed, his "Book of Flowers" has been re-issued in our own times. Charles Henry Bass Breck, one of his sons, followed closely in his father's footsteps. He took a warm interest in the Massachusetts Horticultural Society, and in many ways exerted a strong influence on the progress of gardening. His death is announced as having occurred at Newton, near Boston, on the 1st of August. He was in his 80th year.

LOUIS MENAND.—The term gardener implied much more a few generations ago than it does to-day. Young men paid heavy premiums to get in as apprentices under learned gardeners, and when at the end of the term they were invested with the "Blue Apron," most of them would compare favorably, in general intelligence, with the graduates of our modern universities. Of these broadly educated men, a notable one, Louis Menand, of Albany, New York, recently passed away in his 93rd year. He was born on August 2, 1807, in the province of Burgundy, France, and maintained his interest in flowers and general affairs till his death on the 15th of August, at his home in Albany.

DAVID F. DAY.—On the 22nd of August died at Buffalo, New York, Mr. David F. Day, who may justly rank among America's greatest botanists. A lawyer by profession and a leading member of the Bar, botany—and, indeed, science and literature generally—was but an incident in his career. His name will not, therefore, appear in the annals of science in company with those who have professional fame, but his work was but little less useful. He was one of the main supporters of Judge Clinton in founding the Buffalo Society of Natural History; the author of a Flora of the vicinity of Buffalo; and the general adviser and stimulator of younger men in their work.

In botany and, indeed, in horticulture—for he was devoted to his flower garden—he was far more than a mere lister of plants. He had a broad philosophical interest in them. He loved flowers for the lessons they taught as for the beauty that they gave. He was the discoverer of the law regulating the production of regular and irregular flowers—a question which is yet being mooted in the Old World, where it is not fashionable to recognize New World discoveries in these lines. He had a wide correspondence among the leaders in American science, and his loss will be severely felt.

ORGANOGRAPHY OF PLANTS, by Dr. K. Goebel, Professor of Botany in the University of Munich. Translated from the German, by Prof. Isaac Bayley Balfour, of Edinburg. Part I, General Organography, Oxford; at the Clarendon Press. New York Branch, 91 5th Avenue.

That this will be a standard botanical textbook need scarcely be stated. Our knowledge of the structure and relations of plants has advanced wonderfully of late years. Progress has been recorded in scattered papers and scientific publications, but a general view of the situation in one authoritative work, handy for general study and class-work, was badly needed. Those who have watched the progress of botany during the past ten years, must have noted the great advance in the knowledge of plant structure and plant life, and how far behind our popular works are. The present work brings the history much nearer our own times.

In one respect there will be a surprise to the intelligent American reader. It has been the belief that the German scientific mind was far in advance of the rest of the world, but far in advance as this great work is, it will be regarded here as scarcely up to date. When the author combats as a prevailing idea "that morphology has nothing to do with the functions of organs has been acquired entirely because the fact has been overlooked that the transformations seen in organs are conditioned on a change of function," it strikes strangely on the American ear. In this country no advanced scholar would think of disputing the necessity of taking in organography, morphology and physiology, as merely essential parts of one great whole.

Even in the Old World, surely knowledge must have advanced further than one would judge from these leading works. Where, for instance, is the necessity for a long chapter to prove that monstrosities have hereditary power,

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when every intelligent gardener in the Old World knows that cabbage, cauliflower and many other garden vegetables and fruits are hereditary monstrosities. This weakness of not knowing what is going on among practical men around them, is conspicuous in the work of many great European authors. Even in Mr. Darwin's case he would have lost nothing. He had to assume that mere vegetative vigor and size of seed were proofs of benefits from cross-fertilization. Any intelligent English gardener could surely have told him a different tale. As it is, he has furnished no proof that cross-fertilization is of the slightest benefit to the race. These shortcomings are, however, not peculiar to the present work. It is far in advance of former efforts in this line, and will be a standard for reference in all good botanical libraries.

AMONG THE MUSHROOMS—A guide for beginners. By Ellen M. Dallas and Caroline A. Burgin. A popular work under this title is to be issued the present month (September). The ladies who have undertaken it are members of the Academy of Natural Sciences of Philadelphia, well versed students in the science of mushrooms, and with the advantage not always combined with learned attainments, of presenting the subject accurately in popular and entertaining language. The whole work is a labor of love, looking mainly to the advancement of knowledge in a direction that had many a pleasant path for themselves. In the same line the profits from the work will be devoted to the aid of an institution for children.

LANDSCAPE GARDENER TO FAIRMOUNT PARK, PHILADELPHIA.—The late Wm. Saunders, of Washington, was one of America's eminent landscape gardeners—but he was strictly conscientious, and would be pained to have honors thrust on him that belonged fairly to others. As the public prints say, he was the designer of the very pretty little Hunting Park in Philadelphia, but had nothing to do with the larger Fairmount Park. The designer of East Fairmount Park was John C. Sydney, and the west side was planned in outline by Chief Engineer Cresson, assisted later as "consulting landscape gardener" by Charles H. Miller, who was the first landscape gardener employed on the work—a position he still occupies.

GENERAL NOTES.

ELMS AT NEW HAVEN.—The public prints say that the famous elms of New Haven are failing, and that none of the officials can tell what is the matter with them. In many of our larger cities such matters as trees and parks are placed in charge of the Department of Blind Ignorance. They seldom get famous in these cases. Is it possible that intellectual New Haven is running in the same line?

HOAKS.—Much wit has been spent at the failure of some Englishmen who cannot help pronouncing oak as "hoak." But it would seem that some of the Indians of the past would have committed the same sin against prosody. In examining a collection of dried plants, made 100 years ago, by Mr. Benj. T. Barton, of Philadelphia, there was found a bunch of elm, with very large leaves, merely marked "Ulmus species, at Tuscarora, 1797." Of the bark of this species, the Indians make a thread. The tree is called by the Tuscarawas "Hoaks."

THE GARDEN OF MRS. SHEPHERD, VENTURA, CALIFORNIA.—Many of our readers are familiar with Mrs. Shepherd through her business dealings. A recent Californian paper describes her garden as a delightful spot. It is at the mouth of Ventura canyon, while the Pacific Ocean is but about 2000 feet from the foot hills among which the town is built.

Mrs. Shepherd's garden lies close up against the foot hills, and is protected on the east by a line of pepper trees, under whose arching boughs lies a walk, bordered with brilliant geraniums. Two hundred feet of heliotrope hedge, six feet high, fills the air with purple fragrance on Main street, and yields, annually, a goodly amount of seed that is shipped east to various seedsmen.

Many beautiful things, only seen generally in greenhouses, thrive here in the open air, the wonderful *Strelitzia* being especially at home. Some plants of this rare curiosity are ten feet high. One of the specialties of her business is the improvement of florists' flowers. Her new cannas and begonias are well known. She has 150 varieties of begonias to experiment with.

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A HARDY AGERATUM (Eupatorium coelestinum)

WHILE not strictly an Ageratum, this beautiful dwarf Eupatorium is closely related to it, and resembles it so closely as to be frequently mistaken for it. But it is more beautiful in color—a bright blue—and is THOROUGHLY HARDY. It stands heat and dryness well, though by nature moisture-loving.

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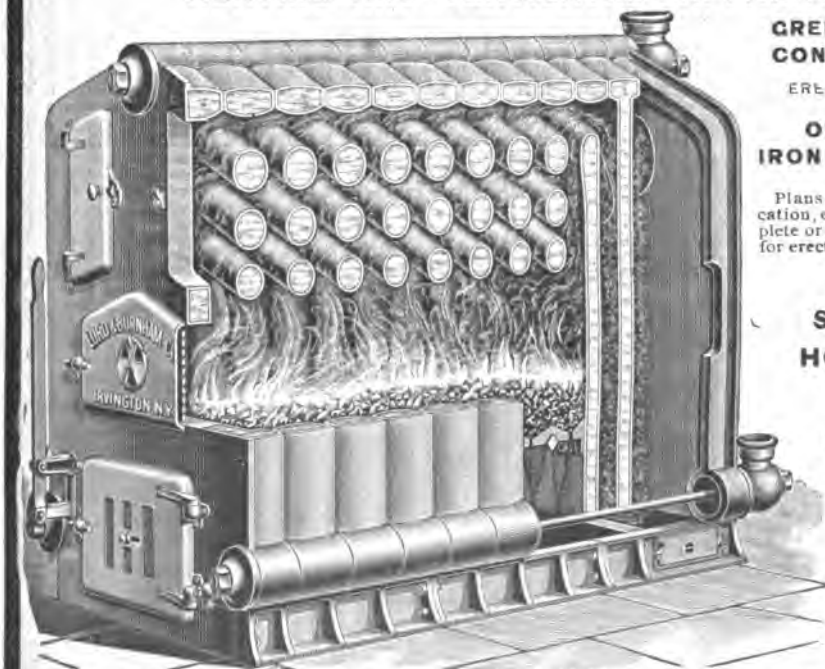

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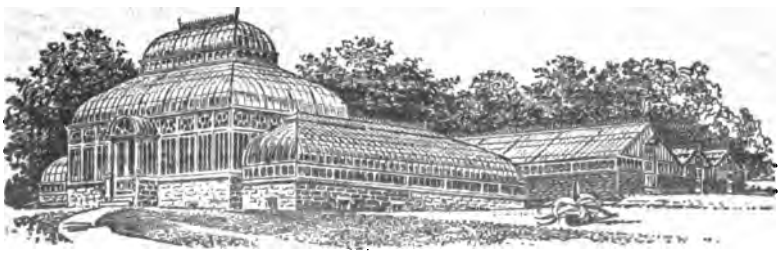

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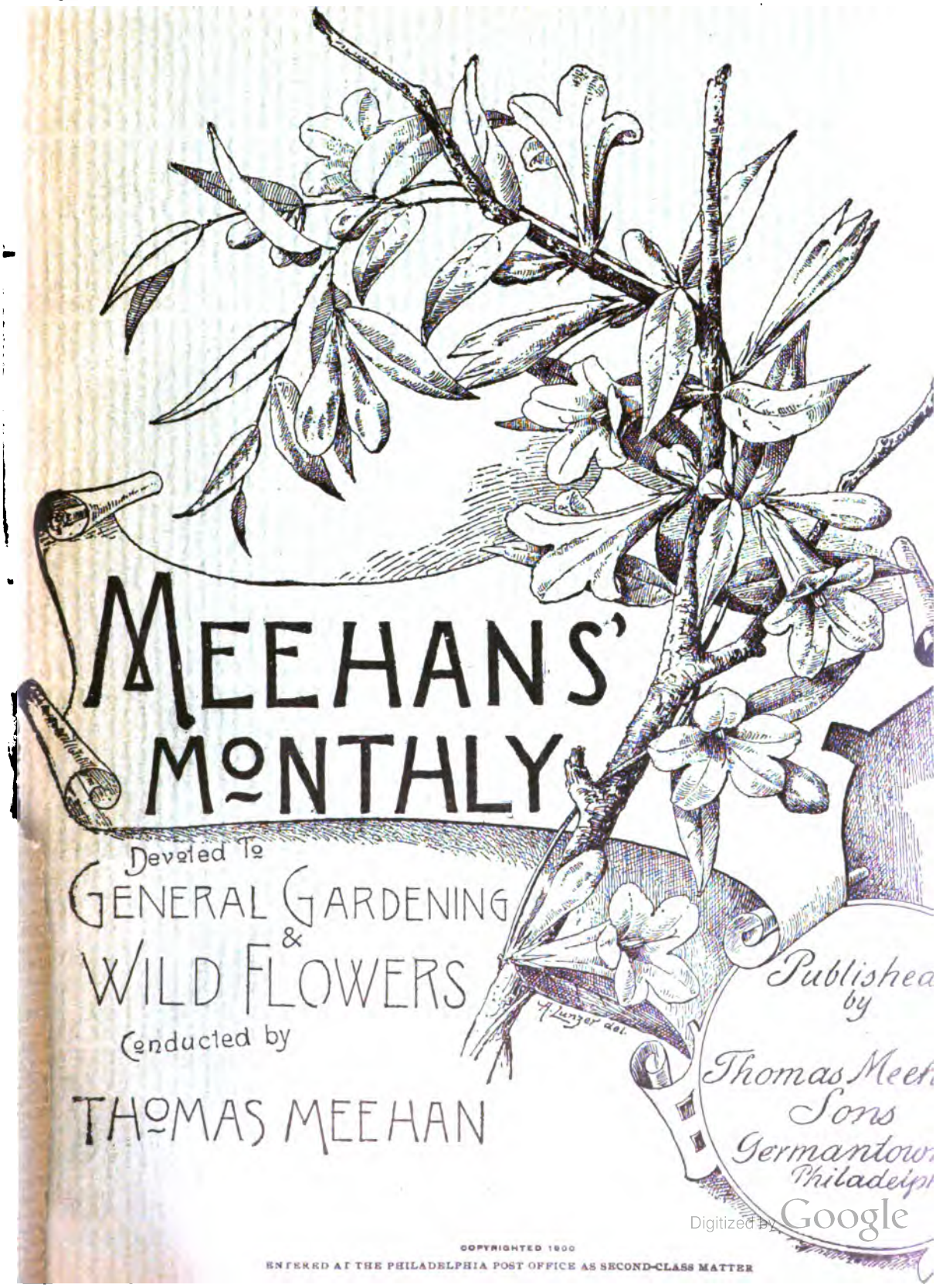

MEEHANS' MONTHLY

Devoted To

GENERAL GARDENING & WILD FLOWERS

Conducted by

THOMAS MEEHAN

A. Lunzer del.

Published by

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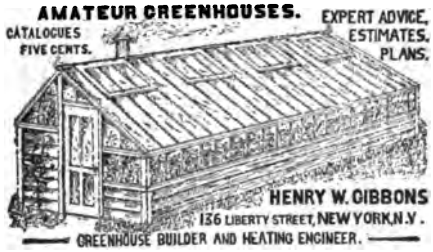

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GAILLARDIA ARISTATA.

AWNED BLANKET-FLOWER.

NATURAL ORDER, COMPOSITÆ.

GAILLARDIA ARISTATA, Pursh. More or less hirsute, often two or more feet high; leaves lanceolate or broader, or lower ones spatulate, from entire to laciniate-dentate or sinuate-pinnatifid; rays in the largest heads one-and-a-half inches long; lobes of disk-corolla subulate-acute and tipped with a cusp; pappus aristate. Coulter's *Manual of Rocky Mountain Botany*. See also *Britton and Brown's Illustrated Flora of the Northern United States, Canada and the British Possessions.*

This very showy wild flower was first made known to us through the collection made by Lewis & Clark, in their celebrated expedition across the continent, from which they returned in 1806. The plants of the expedition were turned over by the American Philosophical Society, whose members planned the expedition, to Dr. Barton, in whose employ was Frederick Pursh, one of the greatest of the botanists then studying the Flora of America. Up to this period, only one species of the genus was known, namely, *Gaillardia pulchella*, which was described, by Mons. Fogereaux, in the Memoirs of the Academy of Sciences of Paris, in 1786, the specimens having been collected in what was then the drier plains of the Great Missouri Territory. Pursh identified our plant with this genus, and published it in his "Flora of North America," in 1814, as *Galardia aristata*, stating that Lewis collected it "on dry hills on the Rocky Mountains." The specimen, from which he made his description, is still preserved in the Academy of Natural Sciences of Philadelphia. The expedition of Lewis and Clark occupied three years to go from St. Louis to the Pacific coast and return. The plants collected on their westward course were unfortunately lost, and only those found on their return fell into Pursh's hands. It was a serious loss to botanical science, for, as it was, those that came to hand proved invaluable, most of them being new to science. Captain Meriwether Lewis, the chief commander of this great expedition, has scarcely had full justice done him. It is not for a great man's contemporaries to see the importance of his work. Results must have some influence in a great question, and these one must wait for. He was born in 1774, in Virginia. The expedition was at first proposed to be under the charge of Michaux,—but as our relations with France at that time were strained, and Michaux was a Frenchman, it was thought better to send out some other, and Lewis, who was Jefferson's private secretary, was placed in command, with Captain Wm. Clark to co-operate with him. After the return of the exploring party, Lewis was made Governor of the Missouri Territory. The biographies say he committed suicide, in 1809. The author of this paper has gone over the evidence cited in support of this statement, and is surprised that this hypothesis has been accepted. It is far more probable that he was murdered, and the story of suicide was started, by those who murdered him, in order to cover up the crime.

The author made his first acquaintance with this plant in a tour through the Rocky Mountains, in 1871. Its favorite haunts in that region were on hill-sides, rather dry, partially shaded by scattering bushes, and mixed with other low-growing forms of vegetation. The plants bore the flowers singly, on a scape but a few inches high, while the flowers were very large for a plant of this diminutive size. The orange and brown flower-heads were very striking,—and suggestive of dwarfed sunflowers, or of some species of *Calendula* or marigold, to which genus, in fact, it is not distantly related. In other localities, collectors describe it as a much-branching plant, and, indeed, the variations, in other respects, are so great that some eminent botanists have been induced to form separate species on these differences. Pursh named the species *Gaillardia*

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aristata, in 1814, as a third species credited to North America, the first being *Gaillar diapulchella*, introduced to France, from Missouri Territory, in 1786,—and Michaux's second species being *Gaillardia lanceolata*, 1803, found in Carolina and Florida.

Stephen Elliott, in his "Sketches," refers to the southern plant as *Gaillardia bicolor*, and Nuttall, following, considered our plant as but a variety of this, and styles it *Gaillardia bicolor aristata*. Pursh, another botanist, makes another form, *Gaillardia rustica*, but which De Candolle, in 1834, (page 652—not page 362, as generally quoted), regards as synonymous with *G. lanceolata*. There are yet other authors who do not regard *G. lanceolata* and *G. aristata* as sufficiently distinctive to warrant separate specific designations. In referring to it as variety *aristata*, Nuttall says of it "indigenous to the grassy hills of the Missouri, abundant near Fort Mandan, and from thence to the mountains." The species, as fairly limited to Pursh's plants, is widely distributed over the northwestern part of our territory from the Mississippi to the Pacific Ocean.

The tendency to vary in its natural locations, already noted, has been taken advantage of by florists to raise numerous varieties, by selecting slight variations, and encouraging further wanderings by sowing the seeds. After successive generations, the slight deviations are further extended, and ultimately become fixed,—that is, variation can go only so far in a given line; when the limit is reached, the tendency to vary comes to an end. One of the most interesting of the garden productions goes under the name of the Lorenz Gaillardias. In this, all the ray florets are tubular, instead of strap-shaped as in the original. These florets are deeply four or five-cleft, and as they retain the purple brown color at the base of each, the contrast with the golden upper portion gives a coronæform appearance, to the head of disk florets, that is very pleasing. Another form is distributed in florists' catalogues as *Gaillardia grandiflora*. This has a particularly vigorous and branching habit, and is remarkably floriferous, starting to bloom about midsummer and continuing until frost arrives. The ray florets are in this more symmetrical than in the natural form. Indeed, the ragged appearance of the ray florets might be an argument against a claim for perfection of beauty in the flower as it appears in a wild state. But even in this respect, much will depend on the length of time the flower has been expanded. Our artist, in his faithful following of nature, has represented a flower in a faded condition in order to show the involucral bracts. The divisions, in this condition, are particularly loose (Fig. 5); but from the same flower he has taken one ray-floret in order to show us the ovarium and pappus (Fig. 2), and which we might say was prettily fringed rather than unduly ragged. The flower is probably in its handsomest condition when but partially open (Fig. 6); and rather more advanced than in this figure. The rich, crimson brown is then particularly striking, and the ray-florets are of more perfect form, and also of a brighter tint than when more advanced.

As a botanical lesson in composite flowers, our drawings will be welcome to the students of this very interesting natural order. There is often a striking difference between the root-leaves and the stem-leaves,—and the characters are in many cases reversed, as if nature loved to deal in contraries. In some species, the leaves at the base are cut and divided—the lyrate form prevailing—while the upper ones are entire; and in other species the lower leaves are entire, while the upper ones may be laciniate or pinnatifid. Our present species is just on the dividing line between these two extremes. All the leaves are more or less toothed; but the tendency to be entire increases as the floral stage approaches (Fig. 1.)

The genus was named in honor of M. Gaillard de Marentonneau, a French botanist of no especial celebrity, described by M. Fogereaux, well known as a historian and for general scientific aquirements, but with no particular celebrity in botanical pursuits. The specimen from which the description of the genus was made, was from plants raised from seed brought from the lower Mississippi. There has been much dispute about the correct orthography. Fougereaux wrote it *Gaillarda*, it was changed by those who succeeded him to *Galardia*,—but moderns generally write it *Gaillardia*.

EXPLANATION OF THE PLATE.—1. Complete plant from a Rocky Mountain specimen. 2. Complete ray floret. 3. Complete disk floret. 4. Head of faded florets. 5. Dorsal view of flower head.

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WILD FLOWERS AND NATURE.

THE MOUNTAIN STREAM.

Cold and clear from the Mountain wells,
  Mirroring brightly the green arcades,
Shattered to foam in the mossy dells,
  Then gliding again through the silent shades,
The immemorial mountain stream,
  With murmur sweet to its kindred calls,
And hastes to the river with distant gleam,
  And fills the forest with waterfalls.

HOWARD WORCESTER GILBERT.

MEDICINAL VALUE OF GRINDELIA.—A correspondent states that "An extract of *Grindelia* is commonly sold in the drug stores, and it is an excellent cure for Poison Ivy if used early enough."

AMERICAN LOTUS.—I have read with much interest the contributions on American Lotus in the November issue, and also your description of it in August. I submit a few notes from my observations with this plant which are not confirmed by previous articles.

The flower of the American Lotus never floats unless by accident. This is contrary to the habits of all the Lotus or *Nelumbium* family. The Nymphæas float; both leaves and flowers of Nelumbiums rise above the water—often six feet.

The American Lotus does not open at night. It, as well as all the genus, is strictly day-blooming. It opens at sunrise. On the first and second days, it closes from 10 a. m. to 3 p. m. On the third day, it only partially closes, but opens out fully the following morning, and remains open day and night till the petals fall, which is usually the fourth and fifth days.

The seeds are slow to germinate. If gathered fresh and planted at once, the result is fair; but, if allowed to dry, they become hard as stone and will lie in water almost indefinitely without any sign of growth. The Indians called them "Seventy-year Acorns," because they thought it required that length of time for them to germinate. I have seen bushels of them drifted into the low bottoms of the Cumberland River, year after year; but have never heard of one seed germinating within fifty miles up or down the river. Once after keeping some planted for three years, I took them up and filed a hole through the shell that the water might penetrate the kernel, and they sprouted at once. Nearly every seed will germinate readily if treated thus. I associate with the American Lotus a great deal,—digging and selling hundreds of them every year,—but seldom meet a spontaneous seedling. They spread very rapidly from the roots, however.

A single plant, unmolested, will cover a pond of one acre within three years.

GEO. B. MOULDER.

BENEFITS FROM CROSS-FERTILIZATION.—"On reading an article, in a late issue, entitled 'Organography of Plants,' page 159-160, it is stated that, 'no proof has been furnished that cross-fertilization is of the slightest benefit to the race.' Was not that exquisite Begonia 'Gloire de Lorraine' the result of cross-fertilization, and is it not a benefit to the race?"

Worcester, Mass. J. C.

When Mr. Darwin, and others speak of "benefit to a race," it is in connection with the origin and permanence of a species. We know, by fossil-botany, that many species have existed in the past, that have no existence to-day, unfavorable conditions having destroyed them utterly. What evolutionists understand by "benefit to a race," is that certain conditions may aid the race in this so-called "struggle for life." Plants of one species that can change their characters to suit changing conditions survive—in other words become new species; while those that fail to change, perish. This is one of the doctrines taught in evolution. Mr. Darwin endeavored to prove this by assuming that a more vigorous growth in an individual plant,—the production of extra large seeds, and a greater number of them,—were evidences of "benefit to a race."

The paragraph referred to, by our correspondent, stated that there was no evidence that the

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assumption is sound. On the contrary, the experience of gardeners is against it. Plants of high vegetative vigor are not as healthy as those of more moderate character,—and the larger seeds are not regarded as producing the best plants. As for the extra fertility of seed-bearing plants, those with high vegetative vigor are usually the least productive. Regarding extra seed production, that might be a point if nature had provided a place for every one to develop its full growth; but, as it is, many thousands are matured for every one that will have a chance to grow. If it were not so, and every acorn or apple seed that grew on the tree had a chance to germinate, they would starve out each other. Heavy production of seeds should be regarded as obstructing rather than aiding the advancement of the race.

Hybridism in the Begonia has certainly been a benefit to the race in the production of numerous beautiful forms equal in every respect to the species brought from their native homes; but in the matter of the longevity of their descendants, there is no evidence that the hybrids would endure for thousands of years longer than those species that had never been hybridized. In fact, the general belief is that they would be less enduring, though there is no evidence to confirm this any more than the opposite proposition.

GAILLARDIA STUDIES IN PLANT-LIFE.—A study of a floret of any member of the order of *Compositæ* is particularly instructive. This has to be done carefully by the aid of a good pocket lens, and is most instructive while the flower is fresh. There is seldom time for this when collecting,—and the soaked-out florets that have been wholly or partially dried are not as well suited to the study as the flower when fresh. Great differences will be found in the form of the floret,—a character which, on account of the difficulties already suggested, is seldom noted in botanical descriptions. In our enlarged Fig. 3, we see that the floret is nearly tubular, but slightly funnel-form as it nears the mouth, and that the five divisions are not cut deeply into the tube. The pappus is chaffy at the base; but the awns are of the length of the tube. The two style-branches are of unusual length,—as long, in fact, as the corolla, with considerably more than half of the upper portion papillose. Again, the positions taken will often furnish good distinguishing characters. In many composites, the style-branches recurve,—in this, as our sketch shows, there is a slight inward curve. The heads, also, have character worth noting. In this we see a large degree of permanence in the florets which dry and are preserved within the awns of the ovarium; while in so many species of the order they are early deciduous. In many other lines, *Gaillardia* will furnish material for special study.

THE LAST WILD-FLOWERS OF SUMMER.—Yesterday, I walked out through the woods on the shelving sand rocks, hunting for the last flowers of summer. I noted *Allium stellatum*, wild onion, and *Hypoxis erecta*, Star-grass, a plant of each still in bloom; and one plant of *Oxalis corniculata*, Sorrel, on the roadside, an emigrant from Europe. Dr. Gray says, in his "Manual," it is known, "if distinct from *O. stricta*, by the stipule at the base of the petioles." The stipules were present in this specimen and, besides, it had a small involucre of two bracts half way up the peduncle. The peduncles were one-flowered and were of a handsome shade of yellow, half-an-inch in diameter. We are having a mild and pleasant fall.

F. K. STEELE.

Festus, Mo.

ROOT FUNGUS.—Among the immense number of plants described as belonging to the lower orders of vegetation known as funguses, very few are injurious, whether it may be organized as a mushroom, or whether it is so minute as to require a powerful microscope to discern it, most of them are beneficial to the higher organisms. In gardening, we have a number that trouble us by attacking either roots, stems, leaves or flowers; but they are few that prove very destructive in comparison with the whole number known. Among the Agaric, or, as we may say, the mushroom class, there is one that is exceedingly troublesome. This is the *Agaricus melleus*. When it attacks the roots of a plant, its effects are seen through the whole tree, by a change of the foliage to a paler green, and a tendency to throw out branches from the main stems. No one can mistake when a plant has been attacked by this species of root-fungus. Cuttings or grafts from the trees carry the ferment material with

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them, and the disease is thus widely spread. For large trees, no remedy has been found,—but for herbaceous plants and small shrubs, a thorough soaking with copper infusion has been found thoroughly effective.

The annexed engraving of the fungus is taken from our excellent contemporary, the *Canadian Horticulturist*, which has been giving a series of high-class articles, recently, on the diseases of trees and plants by fungus agency.

ABIES EXCELSA, NORWAY SPRUCE.—Trees, especially evergreen trees, like church spires, point heavenward. Once, on a winter day, I rode through a grove of spruce, hemlock and pine, laden with the gift of the snow-clouds, and the strange beauty of it all has never from memory quite faded.

In every clime, a tree is "a thing of beauty and a joy forever." How healing is the breath of the pine tree of the rocky hillside. And the apple tree is a sermon in itself, upon the results of culture. As Fredrika Bremer said in "The Neighbor," "Truly to comprehend, to value, and to admire the beautiful, is a great medium of ennoblement, of peace, of happiness." MRS. E. E. ORCUTT.

San Diego.

LATE WILD-FLOWERS IN WASHINGTON.—Severe frosts and cold weather, in October, seemed to kill most of our garden plants,—at least, they stopped blooming. But a few weeks of mild weather, with frequent rains, have revived many of them, so that we have quite a number of flowers opening now—Marguerite Carnations, candytuft, *Phlox Drummondi*, California Poppies, and clover, *Trifolium incarnatum*, *T. repens*, and *Medicago lupulina*. The foliage of *Petunia* and other flowers is fresh and green. If only more sunshine, we would have quite a variety of flowers.

Along the road, to-day, I noticed *Gaillardia*, *Solidago*, *Grindelia*, *Achillea*, and *Erigeron*, of two species; *Phlox linearifolia* is blooming more abundantly than any other. I noticed several patches of it, some of them yards in extent, *Potentilla gracilis* var., *flabelliformis*, *Collinsia parviflora*, *Capsella Bursa-pastoris*, and Violets are also quite abundant. I saw a few plants of *Castilleja miniata*. Doubtless, a walk through the woods and meadows would increase this list; but I think it is very good for the last of November. SUSAN TUCKER.

Cheney, Wash.

BARREN SUMAC.—Three or four years ago, one of your correspondents asked if there was a variety of sumac that did not bear fruit, and you wrote it was possible that some fruited every other year, but that there was no record of it, as the point had never been made before. I have examined into this subject since then. There were three groups of it growing near Waukegan, each group nearly circular, about eight feet high in the centre, gradually decreasing in size to the small plants just showing above ground. When I first made a note of them, there was a clear space of about ten feet between each group. Now they have spread so they have united in one group, covering about one acre of land. I have no doubt but that they have all spread from three plants, as there is no sign of a seedling among them. This year, two of the old groups are seeding very fully, while scarcely any can be found on the third one. Last season, the one that is barren now was fruiting, and the other two were not. There is no more beautiful sight in our native landscape than this group which is now taking on its fall coloring. The groups were originally triangular. Now that they are joined together, they form almost a semicircle and are flanked by White and Bur Oaks, which also form a background. The oaks are still dark green and the sumacs purple and golden.

Waukegan, Ills. THOS. H. DOUGLAS.

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GENERAL GARDENING.

THE FRENCHMAN'S FLOWER.

The Scot may love his thistle-down,
Its prickly leaves and purple crown;
And Erin on her shamrock smile,
The beauty of her emerald isle;
The holly twine its glossy braid,
A starry wreath for Albion's head;
We love the modest violet,
And dearer still the mignonette.

PERCIVAL.

FORCED RHODODENDRONS.—Plants such as the White Lilac, *Genista*, *Spiræa*, *Deutzia*, Harris' Lily, etc., are commonly forced for Easter decorations,—and they all please every one; but a more frequent use of plants now but little used for such purposes would generally produce even greater admiration. It is not new to talk of forcing the Rhododendron; but undoubtedly it is not common to see it. Yet a nice plant with six or more flower heads makes a beautiful specimen,—and like the Azàlea can be used again—planted out or kept for forcing another year. To those in the northern parts of this country where such plants do not do well planted outside, the privilege to see them blooming indoors is great. About the time of blooming, they like an abundance of water if the pot be well-drained. Very little heat is required to bring them into bloom, though more than many others—about the temperature of a carnation house.

AMARYLLIS HALLII. — This beautiful bulb deserves a place in every garden, however small, where chaste flowers are appreciated. Its lovely, shell-pink petals, veined and clouded beautiful azure blue, are indeed superb. In some collections, this bulb has not proven hardy. Sometimes, however, I fear the cause has been (as it was with me) viz., the seedsman or bulb-merchant supplying the wrong variety. At other times the cause has been the utter unsuitability of location. It must be remembered that this bulb is a native of the Cape of Good Hope, and, as the temperature does not, of course, fall so low as here, yet certain ample modifications may be made to insure its hardiness. The bulb, when purchased in November, was planted six inches deep in a warm, sheltered spot. A good handful of sharp sand was placed beneath the bulb and then the hole was filled with light soil, and over all four inches of rough stable litter, and when May came in our wished-for friend, *Amaryllis Hallii*, also made its appearance.

This bulb, like all *Amaryllis*, (*Aulica platypetalus* excepted), makes its growth first, then loses its foliage, and in three weeks the flower stems push themselves up through the ground to a height of two to two-and-a-half feet. Each stem carries from five to eight flowers, and is a beauty for three weeks. The plant or bulb here this year pushed *eight* flower stalks with an aggregate of no more nor less than fifty-three flowers. All who follow above directions will not, I am pursuaded, be disappointed, as the bulb increases in strength very rapidly, although it multiplies very tardily.

Rahway, N. J. A. P.

REMOVING LARGE LIMBS OF TREES.—A correspondent writes:—"Will you kindly tell me, in the columns of the MONTHLY, the proper season of the year to cut large limbs from trees. I have a great number of trees, such as walnuts, chestnuts, lindens, etc., and I wish to cut off some of the lower limbs so as to have a better view and more air; I want to do this in the proper season."

It is practicable to remove the large lower limbs from trees at any season of the year. There might be an exception to removing them in the summer time provided the number of branches removed is in excess of those remaining. This would tend to weaken the trees very greatly. The most favorable time for doing such work is in the winter. If left until nearly spring or early summer, the wounds will heal more readily, as while the sap is in motion new bark is made at once. In any event it is desirable to paint the wounds with thick ordinary paint or some-

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thing that will keep out the air and moisture, until the new growth of wood covers the wound.

THE CANNON-BALL TREE.—Now that some of the West India Islands have become American possessions, the interesting classes of vegetation are receiving marked attention from visitors. From Mr. Joseph C. Roop, of East Stroudsburg, Pa., we have the following note:

"I know but little about the Cannon-Ball Tree, but it is very curious:—

The balls resemble cocoa-nuts in appearance, but are not edible, and I have never seen them cut open; but some of our passengers took specimens to their state-rooms, and were glad to throw them overboard in a day or so on account of the intolerable smell they gave out. They hang on rope-like stems, and on the same stem may be seen buds, blossoms and matured fruit, or whatever you would call it. The flowers are thick and heavy, somewhat resembling the flower of a single hyacinth, and are of a pinkish color, sometimes tinged with yellow. We saw this tree in several of the West India Islands, but this one in particular was the handsomest specimen of all. I do not know whether it is a native of the places in which we saw it, but all we saw were single specimens and in the Botanical Gardens, as they call their parks."

This very curious tree is closely related to the myrtles. All these, however, have leaves dotted by oil glands, a character that aids largely in determining the relationship.

The Cannon-Ball Tree has nearly all the characters of the myrtaceous group, but has dotless leaves,—and on this account, with a few congeners, has been created into a separate order called *Lecythidaceæ*. It is the *Coarou-*

CANNON-BALL TREE.

pita Guianensis of botanists. When fresh, the fruit is delicious; but, as our correspondent notes, after a few days it is as abhorrent as a piece of stale flesh. The shells are used for drinking purposes, as we use the shells of cocoa-nuts.

PROPER TIME FOR PRUNING TREES.—Many inquiries are made in regards to the proper time for pruning trees or shrubs, both ornamental and fruiting. It is impossible to answer except in a general way, as the individuals to be treated must be each one considered. Where

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considerable pruning is to be done, the need for a practical man with plenty of experience and a knowledge of all kinds of trees is evident.

In the case of fruit trees, it may be necessary to thin out the branches to permit the free circulation of air and light—very essential things to strong, healthy growth. Such pruning is done in the winter, any time after the leaves have fallen, though wounds will probably heal with greater ease if made towards spring. A careful painting of the wounds, however, makes it safe earlier. Should the growth of the trees be too straggling, they should be pruned lightly during early summer, while the sap is active and growth is being made. At the same time it will encourage the production of fruit buds, which are set on short spurs.

As regards the ornamental trees, the same rule will apply to the thinning out of branches; the weaker ones are, of course, to be removed, allowing the strong ones to remain. If they are to be put into shape, possibly a little pruning in winter and a little more in May or June, when growth is resumed, would bring about the desired results.

The flowering trees and shrubs must be pruned according to their respective characters. If it is desirable to retain flowering buds for the first season, most early-blooming plants should not be pruned very much until after they have bloomed, as the flowering buds are formed the season previous. Of course, a thinning out will do no harm in this respect, and will give much more strength to the remaining branches.

One correspondent asks if the end of March is too late to prune apple trees in northern New York. Following the above principles, it would not be,—in fact, one could prune in any month if it is done judiciously with an understanding of the results that would follow.

EXPANSION OF TREES.—Much error is diffused by the use of improper terms. A work on forestry, before the writer, referring to attachment of labels or guards to trees, remarks that "it should be by copper wire, which stretches as the tree expands." But there is no expansion of a tree in a physical sense. A wave flows over the sand by the sea-shore,—but not by expansion of the waters. In like manner the new wood of trees flows over the older wood,—but this is not expansion. If the wire attachment to a label be loosely over a horizontal branch, and yet so firmly that it will not be disturbed by the wind, the wire will be covered by the new growth, though there be plenty of room in the wire loop for expansion.

DISEASE IN THE ENGLISH BIRCHES.—It has been assumed that the disease, in the English Birches, that has become so prevalent over a wide area in the United States, came to us from the Old World. A recent issue of the London *Gardeners' Chronicle* seems to confirm this. It says :—

"Writing in *Nature* of October 18th, Mr. Robert Paulson mentions that the Birch trees in Epping Forest have been attacked by a disease which causes them to die very rapidly. The disease is attributed to the presence of a fungus—*Melanconis stilbostoma*."

BEAUTIFUL AUTUMN LEAVES.—Few plants display a more wonderful coloring of foliage in autumn than the blackberry. The shade of color is uniform and the beauty lies chiefly in the green veining of the leaves. The leaves of the Scarlet Oak are admirable for decorative purposes, being persistent and therefore less likely to destroy effects by falling or drying up quickly.

FOREST PLANTING.—MEEHANS' MONTHLY has always contended that there was no reason why joint stock should not be formed for profitable forest culture. Year by year, the tree-covered land would increase in value as the trees approach nearer and nearer maturity, and thus bring a bonus for the stock. The writer knows of a piece of forest land bought by a friend, not so very many years ago, for fifty cents an acre, and which recently brought an offer of $100 an acre for the privilege of cutting off the timber. We learn, by a recent issue of the excellent journal, *The Forester*, that one such company is actually being formed to be known as the American Reforestation Company. Its headquarters is in the office of the *American Lumberman*, of Chicago. It is proposed to start with 350,000 acres, and plant White and Red Pine. Wisconsin and Michigan seem to be the States chosen for the experiment.

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NEW OR RARE PLANTS.

THE GINGKO TREE.—References to the fruiting of the Gingko, or Maiden-hair tree, in recent issues of MEEHANS' MONTHLY, have brought many letters from obliging friends in various parts of the country noting that seed-bearing specimens are not infrequent. In former times, it was supposed that the tree was simply dioecious,—that is to say, having some specimens wholly male and others wholly female. *Flores dioici* is indeed one of the characters of the genus, as given by Prof. Parlatore, in that standard work, De Candolle's *Prodromus*. It is really polygamous,—that is to say, while some trees have wholly separate sexes, others have both kinds on the same plant, just as many conifers have. This accounts for individual trees, completely alone, often being abundantly fertile.

ILEX CRENATA IN FAIRMOUNT PARK, PHILADELPHIA.

ILEX CRENATA.—Annexed, we give an illustration of a noble member of the holly family, growing in Fairmount Park, Philadelphia, from a photo, taken by Miss Marie Thackara. When we talk of holly, the famous *aquifolium* of Europe comes to mind,—and, indeed, this, with its numerous varieties, constitute about all any of us know of the holly family. But there are numerous species, many of great beauty, besides the celebrated one of old England. A number are natives of Japan. This one was described as *Ilex crenata*, by Charles Peter Thunberg, who, in 1784, wrote a "Flora of Japan"; but it is only during comparatively recent years that its beauty has become known to cultivators. So far as we know, the Fairmount Park specimen is the finest in the United States.

CEDRUS ATLANTICA.—Trees give us pleasure by their beauty, as well as for the grand natural scenery in which they take a prominent part. But many give additional interest by reasons of their historic associations, and are frequently esteemed especially on this account by intelligent garden-lovers. Few historic trees do more for us in this line than the Cedar of Lebanon. It is the "Tree of Life" that had such a sentimental place in the ancient Babylonian mind,—the tree from which was provided the ancient Egyptians' burial caskets,—and memorably the cedars which aided Solomon in building the famous temple at Jerusalem. Mount Lebanon was at one time completely clothed with vast forests of them, and it is said some trees are still left on this historic spot. There are yet, however, other mountains in Cilicia, and perhaps elsewhere, from whence supplies can be obtained.

In the case of the Cedar of Lebanon, as of other trees, there are what are known as geographical varieties,—that is, the same thing

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with slight variations,—and what is known in nurseries as the Atlantic or Mt. Atlas Cedar, is one of these. It differs from the originally known Cedar of Lebanon in its more conic growth, its bluish-green foliage, its smaller cones, and these cones borne on short spurs on branches. It is not infrequent on the Mountains of Cilicia, but seems most at home on Mount Taurus. It is very hardy, but like most coniferous trees, is fond of company, and thrives better when in groups with others.

The beautiful specimen here illustrated is from a photograph taken by our correspondent, Mr. John W. Duncan, and kindly sent by Mr. Robert Williamson. It represents a tree growing on the grounds of his employer, Mrs. A. A. Anderson, Greenwich, Connecticut, where are very many other fine, rare specimen evergreens. As may be noted, the tree is about twenty-five feet high. Many mountain conifers become more glaucous in proportion to altitude, and the seedlings mostly reproduce the acquired glaucous character. These are known in cultivation as *Cedrus Atlantica glauca*, to which class this specimen belongs.

CEDRUS ATLANTICA.

FRUITS AND VEGETABLES.

CAMPBELL'S EARLY GRAPE.—Mr. Geo. S. Josselyn sends a basket of Campbell's Early Grape. The bunches are large, berries deep black and of the size of Damsons, the flavor very sweet. Mr. J. says they ripen at the same time as Moore's Early, and are of equal quality but become better than this good grape by being left a while on the vine. He has had them remain on the vines for ten weeks—even till frost came. It is also a remarkably abundant bearer.

CAPRIFIED FIGS.—What has been recently said, in MEEHANS' MONTHLY, regarding fig-culture in the Northern States, has created wide-spread interest and discussion. Mr. Geo. C. Roeding, of Fancher Creek Nursery, Fresno, California, places us under great obligations by sending us a box of "Smyrna Figs," as they have them, in a commercial condition. Of the figs themselves, we can safely say, that they are equal to the very best that come to us from the Old World. The State of California should do public honor to these intelligent and energetic men, who have done so much to

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place her people among the world's foremost contributors to the welfare of the human race.

The matter is of such a national as well as individual interest, that we give in full what Mr. Roeding says of it,—only remarking here, that the subject may be taken up again hereafter.

"The figs in this package are genuine Smyrna figs grown on the Fancher Creek Nursery, seven miles east of Fresno, California, and are the first produced on a commercial scale in the United States.

The trees were grown from cuttings taken from the famous Aidin district, in the interior of Asia Minor, distant about seventy-five miles from Smyrna. Mr. W. C. West was sent to Smyrna, in the year 1885, by Mr. F. Roeding, for the purpose of making a personal examination into this subject and bringing over cuttings of the very best Smyrna figs. The expense of the trip and the securing of the cuttings amounted to $3,000.

These figs represent experiments extending over a period of fourteen years, and the care and cultivation of sixty acres, or 4,200 trees from 10 to 14 years' old.

They have never been sulphured or processed in any way—the color is natural. They are sweeter than any figs ever produced in the United States. An average sample of these dried figs, according to a recent analysis made by Professor Hilgard, of the University of California, showed that they contain 63.92 per cent. sugar, which is 1.42 per cent. sweeter than the imported Smyrna fig.

They contain fertile seeds, giving them an exquisite, nutty flavor found in no other fig grown in the United States. Each seed represents a single flower.

To produce a fig which, when dried, would equal in flavor and sweetness the fig of commerce so universally esteemed, has been the desideratum of every horticulturist interested in fig culture.

To all outward appearances, the fig tree, unlike other trees and plants, develops fruits without first producing flowers. But these appearances are misleading, for on cutting the fruit open it will be found that it contains a large quantity of inconspicuous flowers closely grouped around the rind, which is really the receptacle for them.

Furthermore, there are four distinct kinds of flowers found in the figs, namely: male, female, gall and mule flowers. Male, female and gall flowers are found in Capri or Wild figs, the number varying in greater or less degree in the various crops.

The essential point of difference, between the Symrna class of figs and the Adriatic class, lies in the fact that the Smyrna contains nothing but female flowers, and that unless they are pollinated, either artificially or through the agency of the fig wasp, *Blastophaga psenes*, the fruit never reaches maturity, but shrivels and drops from the tree when one-third grown. The Adriatic, of which there are fully 100 varieties growing in this State, contain mule flowers which cannot be pollinated, but which, nevertheless, develop and mature edible fruits, although the seeds are sterile.

In other words, the Smyrna fig is valueless unless the flowers have been caprified; while the Adriatic, and that embraces all varieties of figs which have matured their fruits in the past without the aid of the insect, cannot be improved upon nor benefitted in any way, for their flowers cannot be fertilized.

The first Smyrna figs grown in the United States were produced on the Fancher Creek Nursery, in a very limited number, in the year 1890, by transferring the pollen from the Capri figs and introducing it into the Smyrna fig by means of a tooth-pick. All figs treated in this manner developed into large, fine fruits with perfect seeds; while untreated figs shrivelled up when about the size of a marble and dropped to the ground, thus proving conclusively that caprification was an essential factor in the production of this fig.

The Capri fig stands in the relation of male to the Smyrna or edible fig. It occasionally produces an edible fruit but without flavor, its principal value being that it is the habitat of the *Blastophaga*, for without it the insect cannot exist.

The propagation of the fig wasp takes place in the following manner, in the June crop of the Capri figs, and it is the same in all succeeding crops:

The male insect, which is wingless, is the first to appear from the galls. It crawls around in the fig and, with its powerful mandibles makes an opening in the galls in which the females lie and impregnates them, and then perishes within the fig in which it was born.

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The female insect, which is winged, enlarges the opening in the gall made by the male, crawls through the zone of male flowers surrounding the orifice of the fig, its body becoming covered with pollen in its outward passage, and either enters the following crop of Capri figs, depositing its eggs in the gall flowers from which a new generation of insects is developed later; or, if the fig has been removed before, and hung in the branches of a Smyrna fig tree, the wasp forces its way, losing its wings in the operation, into the female fig, then in the proper state of maturity to admit its entrance, and in its endeavors to lay its eggs, and laden with pollen obtained in its outward passage from the Capri fig, fertilizes the female flowers and perishes, leaving no offspring, the female flowers being so constructed that it cannot deposit its eggs.

All Smyrna figs thus entered produce fertile seeds, develop and expand, and although the wasp sacrifices its own life, it paves the foundation for the propagation of the fig tree as well as for the production of a fruit which would otherwise be worthless.

The Smyrna fig commences to mature about the middle of August and continues to ripen its crops until the latter part of September.

The figs are allowed to drop of their own accord and are practically dried when they fall. The process of drying is very simple. The figs are gathered from the ground every other day, transferred to the drying ground, dipped into a boiling brine made by dissolving three ounces of salt to a gallon of water, and then placed on trays, the time of drying varying from two to four days according to the weather. The dipping of the fig hastens the drying and makes the skin pliable.

After the figs are dried, they are placed in sweat boxes where they are allowed to remain for two weeks to pass through a sweat. These boxes hold about 200 pounds each. The only other treatment they receive before packing is to wash them in cold salt water for the purpose of removing all dirt and floaters, the latter being figs which are overdried or improperly fertilized and which rise to the top when placed in the brine."

ABNORMAL SECKEL PEARS.—I am glad the pears (see page 174) were of enough interest to elicit comment in the pages of the MONTHLY. My theory, in regard to the *bees*, was based partly on this: Last year, the pear and apple trees bloomed at the *same time;* usually the apples bloom first.

Secondly: The drought may have had a modifying effect in causing the pear to degenerate, —so to speak,—for in the order of differentiation, is not a pear a variety of apple? The apple could not put on the pear shape in one season, as the pear is the higher evolution and the result of a long series of selection. The son of a gentleman might become a boor in one generation; but the son of a boor could not become a gentleman in that time. This is my impression of the order of development. If by "carpellary structure," this means the flesh of the pear, it was greatly changed in most of them,—both in structure and flavor. They were coarser grained and less sweet in flavor, so that the family avoided them when they could get one of the regulation shape.

Our trees have borne exceptionally large fruit, and superior in flavor; but how this freak was caused this year is a mystery

Our Bellflower Apple tree, close to the Porter tree, has also taken on the Porter shape and color to some extent, and ripens earlier than it should if it was a true Bellflower. How the change has come about, I do not know.

(MRS.) SUSANNA M. GASKILL.

Swarthmore, Pa.

To the above interesting details connected with the apple-formed Seckel Pears, it seems useful to note that, by "carpellary system" is meant the whole covering of the seed as prepared by the parent plant. The seed itself is a new individual springing from a single cell that has been aided in its development by a grain of pollen from another individual. The effect of this union can only be on that which follows. There cannot be, philosophically speaking, any influence on that which is past. Experiment sustains philosophy. The writer can recall no case where those, who have carefully experimented, found any retro-active results. On the other hand, he does remember, though he cannot now note the exact reference, where careful experiments were made on the common stock-gilly. White ones were pollenized with purple; and purple-flowered ones were fertilized from the white blossoms. The cotyledons on seed-leaves showed the color or want of color in each case. There was no dif-

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ference of tint in the coverings of the seed, as there is in cases of self-fertilization, where the pinkish tinge is evident throughout.

The whole subject is one of great interest, and deserves more careful experimentation than it has yet received.

NOTES ON VEGETABLES.—*Large Yields.*—I once raised forty merchantable potatoes from one large potato, planted whole and alone.

Wild Potatoes.—These potatoes were recently secured from the mountains of Mexico, the native home of our domesticated potatoes.

In digging my crop, one fall, I found one old potato that was as sound as when I planted it, and as I have an experimental turn of mind, I saved it to plant again the next year to see if it would raise a second crop, and, sure enough, it did, and a bountiful one, too, for it produced one hundred and twenty-five. I planted it alone and by itself.

Danverse Onions.—On forty-four square rods of ground, I once raised two hundred and ten bushels of merchantable onions.

In 1898, in ten inches of row, I had three pounds of onions, the seed occupying only six inches in the row.

Hubbard Squash.—From one transplanted plant, I raised sixteen fine squashes.

Oat Yield.—From one kernel of Norway Oats, I raised fifty-three stalks, and thirty odd (I have forgotten the exact number) heads. From an average head selected, and the kernels counted, it was estimated there were, in all, 6,441 kernels from the one planted.

A Prolific Sun-flower.—This yield of flowers on *one* stalk I have never seen beaten.

When all were blown, I cut the branches, one by one, counting each separately so as to not be liable to count any twice, and the number was 125.

A Prolific Tomato Plant.—From one single plant, I have raised, this year, 100 tomatoes.

Moscow, Vt. TIMOTHY WHEELER.

HOUSE CULTURE OF THE FOREIGN GRAPE.—The time will probably come, in America, when the European Grape will again be a valuable commercial fruit. It was at one time, the fruit selling readily at $1.50 a pound. The cultivation went down for several reasons, among them the fear of competition with the out-door grown European grapes from California, the injury to the roots by the phylloxera, and the difficulty of getting the intelligent labor to manage the vines properly. It is clear, however, that no more fear of competition with the Californian product need be feared than with the Spanish grapes that come in barrels of cork dust from the Old World. These are very good in their way, and will usually bring remunerative returns though the figures be small. There is no comparison between these in quality as compared with those grown under glass, by one who knows his business. This has been abundantly proved in England. The Spanish grapes come to England and are sold by auction by the 10,000 barrels at a time, and bring no more than sixpence or ninepence a pound in the famous Covent Garden Market. While the home-grown Muscats and Black Hamburgs bring comparatively enormous prices.

In our country, it was once thought to be absurd to try to raise tomatoes at a profit under glass in winter, on account of the shipments from Florida and the West India Islands. But it has been found a profitable business of late years, by reason of the superior quality of the home-grown article.

FIGS AND HARDY ORANGES. — Regarding the notice of my fig gatherings in the MONTHLY, your six pounds is modest. I have picked over twenty pounds, and only yesterday picked seventeen pounds at one time, and could have gotten several pounds more. The crop this year has been very large.

My *Limonia* had 213 ripe oranges by actual count after quite a number had been taken off.

THEO. D. RAND.

RAISING NEW VARIETIES OF APPLES.—For all the great number of varieties of apples that have been named and distributed, very few, in comparison, have proved general favorities. There is still room at the top, as they say of the learned professions. Those who have large apple orchards, and have still a little ground to spare, might well let a dozen or two seedling apples grow up to bear fruit. If they proved of less importance than others already thought worthy of a name, they could soon be turned into profit by top-grafting with desirable kinds.

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BIOGRAPHY AND LITERATURE.

DAYS WELL SPENT.

O what a glory doth this world put on
For him who, with a fervent heart, goes forth
Under the bright and glorious sky, and looks
On duties well performed, and days well spent!
For him the wind, aye, and the yellow leaves,
Shall have a voice, and give him eloquent teachings.
He shall so hear the solemn hymn that Death
Has lifted up for all, that he shall go
To his long resting-place without a tear.

LONGFELLOW.

HISTORY OF THE COFFEE TREE.—Mr. H. Witte, a well-known horticulturist of Leyden, gives Kaffra, in the southern part of Abyssinia, as the native place of the coffee tree. He mentions Arabian legends, as samples of strange customs in connection with its use. It was not till centuries after its use that it was carried to Java, from whence the first samples were received, in 1706. A tree from Java was then sent to the Botanic Garden in Amsterdam, and when it flowered and ripened seeds, a young seedling was presented to Louis XIV. From this plant, seedlings were sent to Martinique,—and from these plants, again, seedlings were sent to Jamaica, Cayenne, and St. Domingo; while from Amsterdam, plants were sent to Surinam. In fact it was from the one plant, sent from Java in the beginning of the 18th century, by Governor General Van Hoorn, that everything in the French possessions and the West Indies has sprung. In this way has travelled the progeny of the original coffee plant, introduced from Arabia through Burgomaster Nocoloos Witsen, at the end of the 17th century.

Is it not remarkable that we should owe, in this small beginning, so much to the wealth and prosperity of the Netherlands and its possessions, Java, Sumatra, Celebes, etc.,—to say nothing of the industrial development and prosperity of the whole world? In the Dutch dependencies alone, the annual product is estimated at about 70,000,000 kilos (pounds).

Before I left Holland, I read in the papers that much success was following an effort to graft the ordinary coffee plant on the much stronger-growing Liberian species, but I do not know the final result. P. OUWERKERK.

Jersey City, N. J.

CLASSIFICATION OF THE GINGKO.—Mr. Ezra Clift, Buffalo, N. Y., says:—"Speaking of the *Salisburia* or Gingko Tree, I think it a mistake to class it with the conifers, as we have one here which is bearing fruit that resembles yellow fruited plums."

If we translate "conifers," and say cone-bearing plants, surely the Gingko cannot be one of them. But there is really not much difference in the structure. In this plant the disk, dry in the pines, becomes fleshy and wholly covers the seed. In the yew it is also fleshy, and half covers the seeds.

At the same time it may be said that many eminent botanists agree with Mr. Clift, that for this and other minor peculiarities, they should not be classed with the pines.

Dr. Lindley, indeed, made a distinct order of the yew family, which he termed *Taxaceæ*, in which the Gingko would be placed. With this view, it would be the correct thing to speak of the Gingko as of the yew instead of the coniferous family.

LITTLE NELL IN GARDENING.—Art critics in other cities have commented on the bad taste they believe they find in the artistic adornments of Fairmount Park, in Philadelphia. Many, they assert, are out of character with their surroundings. But this verdict can scarcely apply to the representation of Dickens' Little Nell, an illustration of which is given with this paragraph. Little Nell might well be taken as a symbol of gardening. The love of flowers comes in as a relief from all material surroundings. The business man, harrassed by the cares of city details, hurries to his rural home of an evening to bury his cares among the flowers,—and even the tired artisan feels a rest when working till late at night among the

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vegetables in his little yard. The wisest reformers in the city slums do their best work, when they carry a few pots of flowers to the sooner reach the hearts of the depraved. Flowers for the sick ; flowers for the hospitals; flowers in sad events, as well as flowers for

DICKENS AND LITTLE NELL.

unfortunates,—and those who visit the prisons or reformatories tell us that, with an introduction by the aid of a few flowers, they can the joyous occasions, are always a power. Just as Little Nell's goodness among the vicious and depraved conditions that surrounded her, so are

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flowers among the woes and ills of humanity. Dickens' Little Nell might well be taken as the patron of gardening.

The Fairmount Art Park Association has not yet wholly secured this beautiful piece of work,—nor has the site yet been selected by the Commissioners of Fairmount Park. The association would be glad of further subscriptions towards securing the sum needed, and would be equally pleased with any suggestions as to a suitable site for the pedestal. The thoughts expressed in this paragraph would indicate, in a general way, the character of a locality that might be chosen.

AMONG THE MUSHROOMS.—By Ellen M. Dallas and Caroline A. Burgin, Philadelphia, published by Drexel Biddle, 228 South 4th Street. A notice of the prospectus of this little book of 175 pages has already appeared in MEEHANS' MONTHLY. The book itself does full justice to what was expected of it. The Mushroom family has attracted more than usual attention lately, and the general public has been impressed with the fact that it knows little about these interesting plants. The desire to know more has resulted in the appearance of many treatises, all very useful. Many of these, however, are too learned for common use. They cover too much ground,—or in descending, as they think, to public comprehension, strike too low, and become trifling. For scientific accuracy brought within popular comprehension, "Among the Mushrooms" is a rare success.

GENERAL NOTES.

PUBLIC BOTANIC GARDENS.—C. W. G., Merchantville, N. J., says :—"Why does not Philadelphia possess a first-class botanic garden? We could easily beat Kew all to pieces. I spent a day—an instructive one—at Kew, but came away disappointed; wondering why, with such resources at its back, and with world-renowned botanists at its head, it was not ten times as good as it really is."

It would be difficult to establish a botanic garden in any American city to beat Kew, viewed simply as a botanic garden. The main objects of Kew are national. At the same time, the whole world participates in England's advantages. One cannot talk about plants understandingly without knowing them, any more than he could talk understandingly to a wagon builder without knowing the names of its various parts. The great herbarium, economic museum, and collection of living plants which Kew possesses, supplies this opportunity for knowledge. By this thorough knowledge of plants, it is able to act intelligently in regard to the valuable plants for its colonies and industrial enterprises,—the plants themselves being propagated in the gardens and freely distributed to experimenters. The mere gardening features of Kew are secondary,—and were only inaugurated by Sir William Hooker, under the happy thought, that as the whole people—that is the nation—supported Kew, the people at large, as well as specialists, should get some pleasure from the money expended.

As a mere public garden, it would not be difficult to outmatch Kew.

CORK.—The Cork Tree is an evergreen, an oak, *Quercus Suber*, about the size of our Apple tree, and grown largely in Spain for commercial uses. The bark is stripped in order to obtain the cork, which is soaked and then dried. The moment the bark is peeled off, the tree begins to grow another cork skin, and each new one is better than the last; so the older the tree the better the cork. The trees are stripped about every eight years, and so strong does it make them that they often live to the age of 200 years. After the bark is stripped off, it is trimmed and dried and flattened out. Then it is packed and shipped to all parts of the world.

FIG FUNGUS.—The *Gardeners' Chronicle* says that the fig fungus, *Cercospora Bolleana*, is very destructive to the leaves of the fig, and that it has travelled from the Mediterranean region to the Argentine Republic on this continent. No serious attempt, it is said, has been made to arrest its progress. It may be noted that another species of the same genus, *Cercospora Sequoiæ*, comes east from California with seeds and plants of the great tree *Sequoia gigantea*. It is an extremely destructive fungus and has almost wholly prevented its success in Atlantic States. The Bordeaux mixture has been found an effectual remedy.

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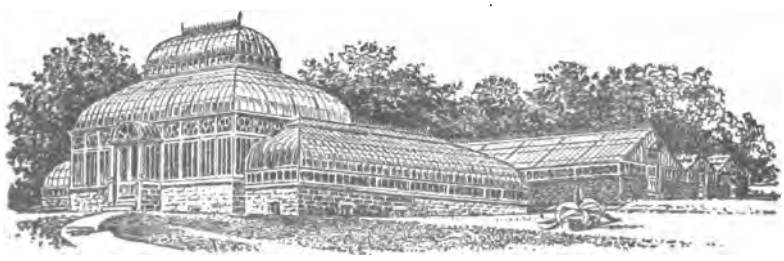

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